ENGINEERING NEWS-RECORD

Giants' stadium: Baseball's other race p. 24

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HOW TO STORE LIQUIDS AT -320°F.

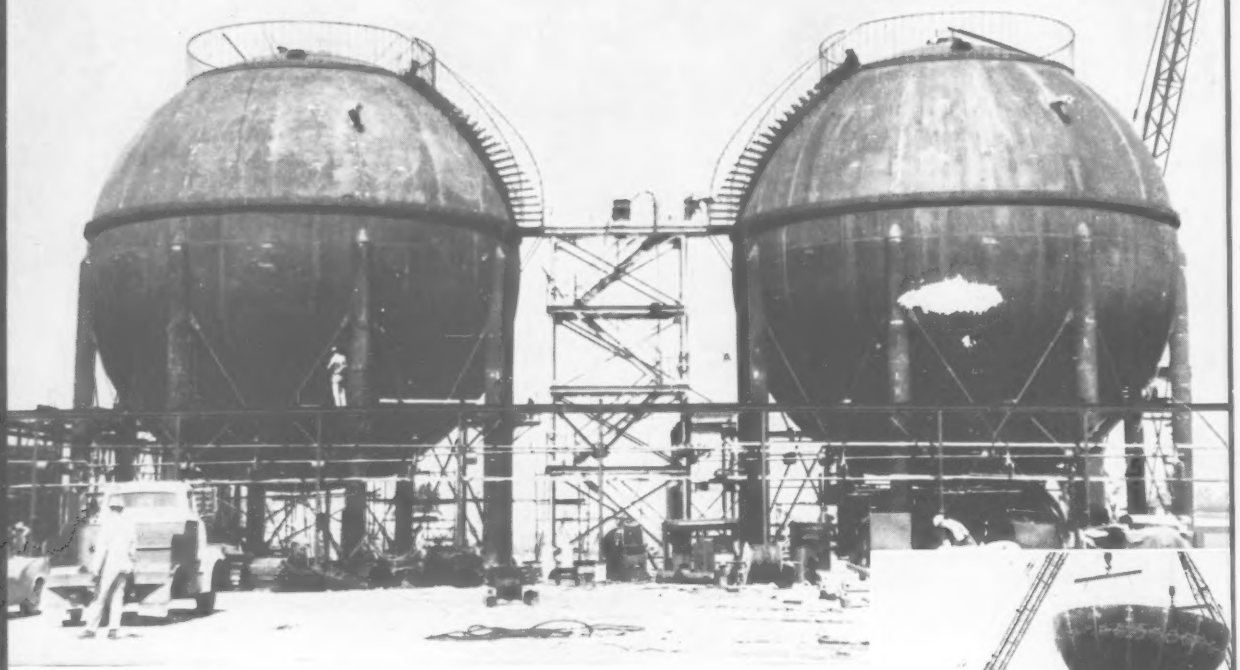

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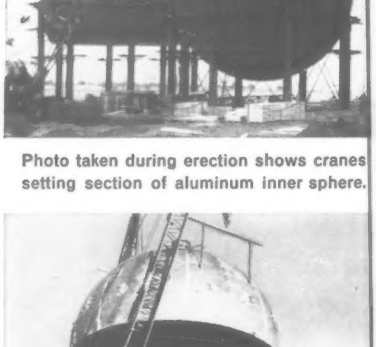
Photo taken during erection shows cranes setting section of aluminum inner sphere.



Above and below: Experienced CB&I erection crews make tough jobs look easy.

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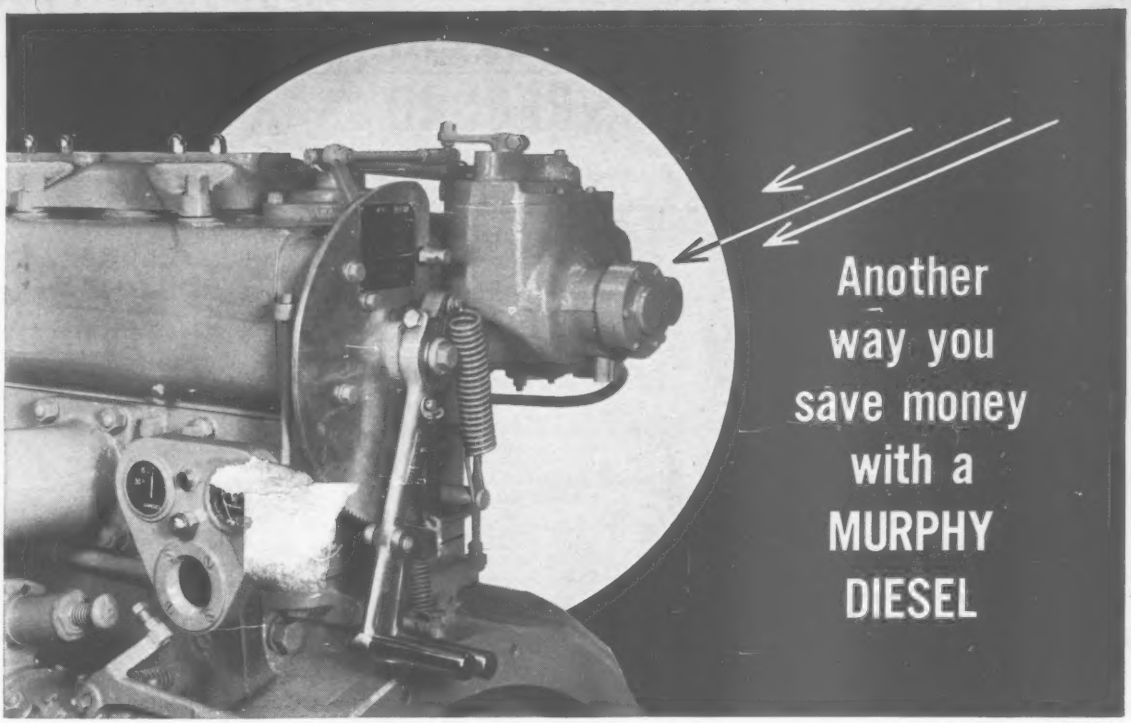

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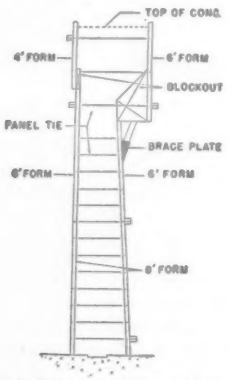

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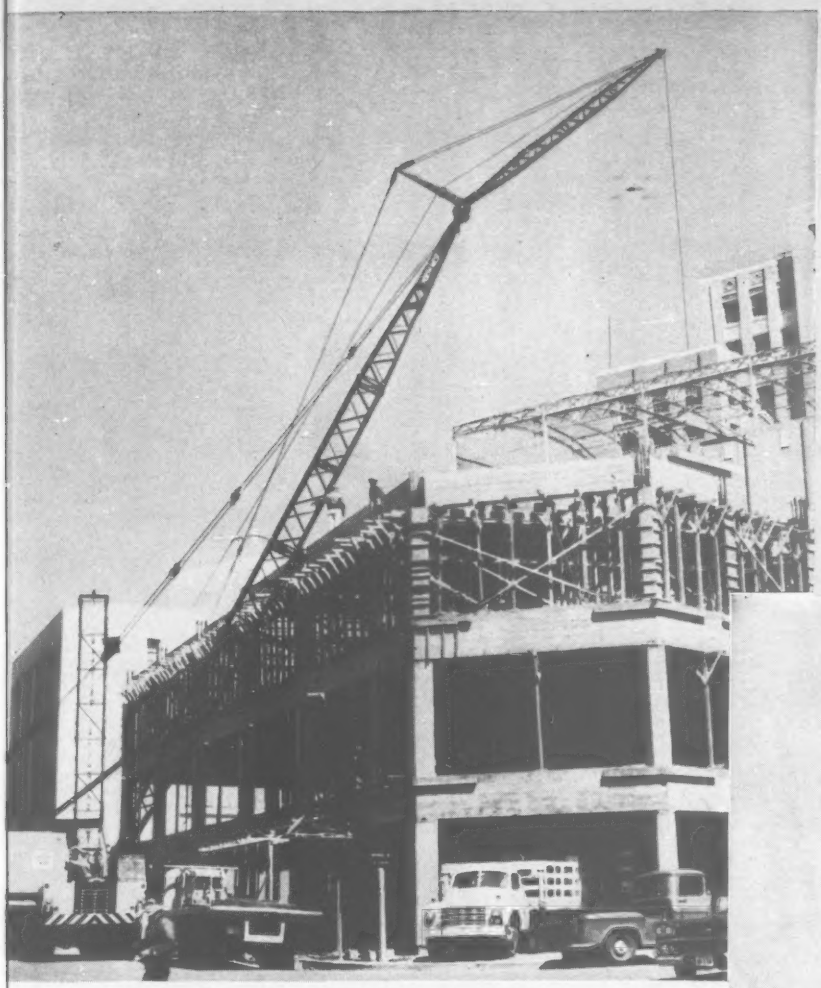

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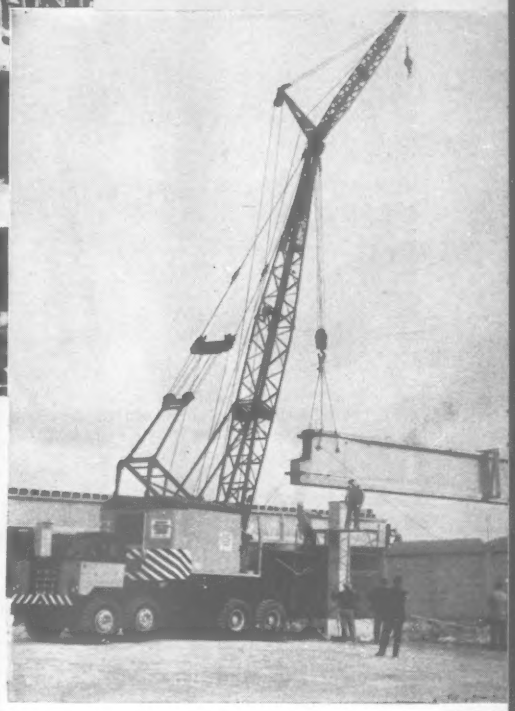

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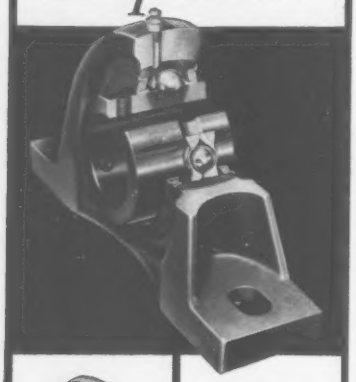

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Reader Comment

Who's Responsible for Quality?

SIR—Quality control of concrete in building construction seems to be a controversial subject. The development of the ready-mix concrete industry has advanced to the point where job mixed concrete is seldom used even in rural areas. This is good since it reduces the responsibility for producing quality concrete from hundreds of contractors to a handful of concrete producers who should be better able to furnish quality concrete simply by virtue of their specialization and greater volume. In addition, they would be better able to hire concrete engineers and specialists than would individual contractors.

I have no doubt that we are getting better concrete than, say, 20 years ago, but the required quality is also higher so that we cannot yet be satisfied with the concrete we are receiving today. Working stresses are higher; architects demand thinner beams and smaller columns. The pressure is on to use "ultimate strength design," which requires that "not more than one test in ten shall have an average strength less than 'design strength'." But concrete of this quality is not usually forthcoming.

Who is responsible? The general contractor points out that he can't control the mixing and the ready-mix producer says he can't control the placing of the concrete. The architect or engineer can't assume responsibility if those who mix and place the concrete can't or won't, especially when he is not being paid for continuous supervision. Let me suggest, then, the following breakdown of responsibility:

- **The architect or engineer** should write clear, concise specifications stating exactly what is wanted and then he should see that they are rigidly adhered to.
- **The general contractor** should hire a qualified ready-mix producer and should follow specifications and good practice in placing the concrete.
- **The ready-mix producer** should design the concrete mix to give the specified results, mix the proper ingredients in the proper manner, and see that the concrete is properly placed.
- **A qualified, independent laboratory,** preferably paid by the owner, should then make the necessary tests to see that the requirements of the specifications are being met.

The ready-mix producer thus assumes the bulk of the responsibility and must answer to the owner if inferior concrete is the result. He already is in a position to control most of the factors affecting concrete quality and need only to assert himself to control the remainder.

The ideal specification should include:

1) The desired strength and a statistical method for determining compliance that takes into account reasonable variables.

2) The minimum cement content, maximum water content and maximum slump. This is desirable to prevent cutthroat competition resulting in inferior concrete.

3) Other materials or methods to give desired properties other than strength, such as air entrainment, beneficiated aggregate, special floor finishes, etc.

Ready-mix producers would like the "prescription" type of specification as opposed to a "strength" type as above outlined. This would be very nice for them as it relieves them of all responsibility except the relatively simple one of dumping the correct materials into the mixer. But it is terrible for the owner who is left holding the bag, wondering if his building will stand up or not. Strength is almost the only requirement for 90% of the concrete used in buildings. It is sheltered from the weather so resistance to freezing and thawing is not a factor; concrete floors usually have a covering, so durability is not a factor, and so it goes. In the remaining 10% including sidewalks, exposed concrete floors, etc., other properties of concrete could be considered important but even here, strength is a rough indication of concrete's other qualities.

Until someone devises a simpler, cheaper, and more accurate method of determining the strength of concrete than the 28 day cylinder test, it will remain as a standard by which concrete quality is measured and, in my opinion, specifications should be written with strength as the principal limitation.

RUSSELL S. FLING
Consulting Engineer
Columbus, Ohio

France's Grandval Dam

SIR—We feel, after reading the article on Grandval Dam entitled, "France's Newest Dam Has Novel Features," (ENR Aug. 6, 1959) that we should point out that this structure actually has no fundamental resemblance to Coolidge Dam.

(Continued on p. 10)

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

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Want to be an Executive?

Management is actively looking for engineers who have the desire and ability to become administrators

by
James M. Jenks

In a sense, this is the golden age for engineers. Once buried in corporate obscurity, many of them have emerged today as likely heirs apparent to the big jobs—and the big rewards—of business and industry. One impressive indication of this growth is that money spent in research and development over the past fifteen years has increased six-fold.

Despite this stepped-up activity, however, the once disorganized scramble for engineers seems to have ended . . . at least temporarily. And perhaps it's a good thing. Actually, the more perceptive engineers had always realized that unusually high starting salaries were often illusory. The gap between money being offered beginners and the incomes of experienced men was narrowing rapidly. Further, more and more thinking technical men concluded that even top engineering salaries are low when compared with the remuneration of highly placed general executives.

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Actually, it comes down to this: To succeed as a business executive, the engineer must learn the art of making decisions quickly and accurately. And this ability is, of course, directly dependent upon knowledge. The "principles" of business—while not as scientific and inexorable as those of engineering—are no less important . . . no less essential to efficient procedure.

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. . . Reader Comment

Although both are buttress dams and the spacing of the buttresses is about the same, Grandval does not have dome-shaped arches. Its arches are cylindrical all the way up, that is to say, they have a single radius. The novel feature is that the tops of these arches abut on a gravity section straddling the intervals between the buttresses, according to an arc following the intrados of the arches.

It is to be noted that while the thickness of the arches is, as correctly stated, 14.5 ft at the base, it is only 5 ft at the top. It is the crest of the gravity section that is 9.75 ft thick.

Another interesting point about Grandval Dam is that it was built on fairly poor schist foundations, upon which many constructors would have hesitated to erect a concrete dam. The type chosen is more economical than an earth or rockfill dam.

The author of the design, for Electricite de France, is Andre Coyne, who used a photograph of a model of this dam as one of the illustrations for his article on French dams in Engineering News-Record, Sept. 11, 1958.

H. LEGROS
A. Coyne & J. Bellier
Consulting Engineers
Paris, France

For Your Calendar . . .

American Association of State Highway Officials, annual meeting, Statler-Hilton, Boston, Mass., Oct. 12-16. Write: ASSWO, National Press Building, Washington, D. C.

Federation of Sewage and Industrial Wastes Association, annual meeting, Statler Hilton Hotel, Dallas, Tex., Oct. 12-15. Write: Federation of Sewage and Industrial Wastes Associations, 4435 Wisconsin Ave., Washington 16, D. C.

National Safety Congress Construction Section, Hotels Conrad Hilton and Morrison, Chicago, Oct. 19-21. Write: Clement J. Luepke, Staff Representative, National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

American Public Health Association, annual meeting, Convention Hall, Atlantic City, N. J., Oct. 19-23. Write: American Public Health Association, 1790 Broadway, New York, New York.

American Society of Civil Engineers, annual convention, Hotel Statler, Washington, D. C., Oct. 19-23. Write: ASCE, Engineering Societies Building, 33 West 39th St., New York 18, N. Y.

Society for Experimental Stress Analysis, annual meeting, Pick Fort Shelby Hotel, Detroit, Mich., Oct. 21-23. Write: Society for Experimental Stress Analysis, P. O. Box 168, Cambridge 39, Mass.

National Conference on Industrial Hydraulics, Sherman Hotel, Chicago, Ill. Oct. 22-23. Write: R. D. Meade, 3300 South Federal St., Chicago 16, Ill.

Cast Bronze Bearing Institute, annual meeting, Bedford Springs Hotel, Bedford, Pa., Oct. 22-24. Write: H. Scobie, Non-Ferrous Founders' Society, 1604 Chicago Ave., Evanston, Ill.

Non-Ferrous Founders' Society, annual meeting, Bedford Springs Hotel, Bedford, Pa., Oct. 22-24. Write: Herbert F. Scobie, Non-Ferrous Founders' Society, 1604 Chicago Ave., Evanston, Ill.

Acoustical Society of America, session on cavitation, Cleveland, Ohio, Oct. 22-24. Write: John Karpovich, Physical Research Laboratory, Dow Chemical Co., Midland, Mich.

National Highway Conference for County Engineers and Officials, annual meeting, Leamington Hotel, Minneapolis, Minn., Oct. 26-28. Write: County and Local Roads Division, American Road Builders' Assn., World Center Bldg., Washington 6, D. C.

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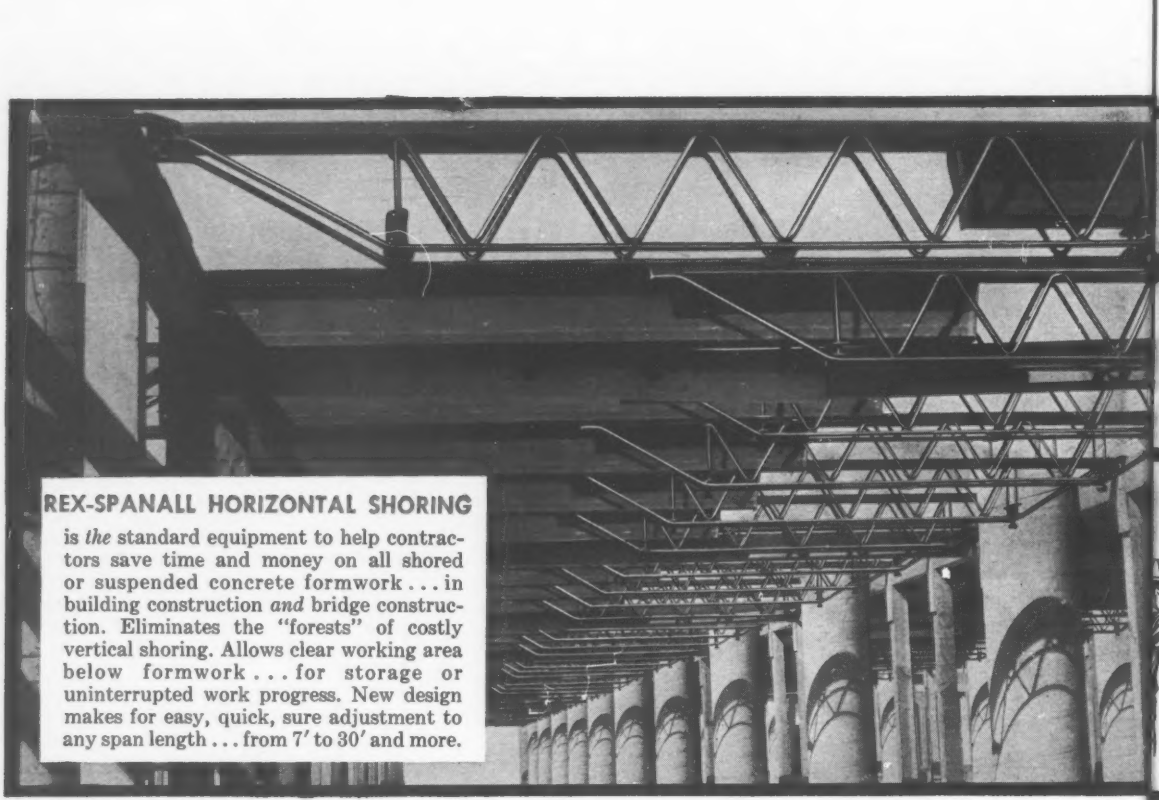

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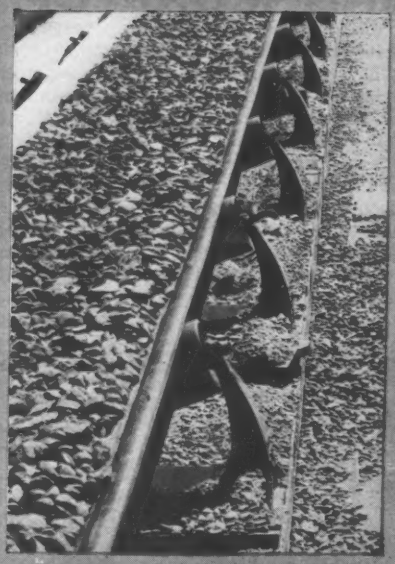

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ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

THOSE NEW STARTS WILL START—Budget Director Maurice Stans last week brushed aside fears the Administration might freeze funds for the new projects provided in the recently passed public works bill. He said work would go forward on just about all the new jobs during the first six months of next year; contracts to be let will amount to about $55 million. President Eisenhower wanted no new starts.

CLASSROOM BOXES—Most U. S. school buildings are inflexible educational straitjackets, says the first annual report of the Educational Facilities Laboratory, a Ford Foundation organization. Terming typical school layouts "egg crates," the report scores poor use of interior space and lack of flexibility for multiple use of class and recreation areas.

BREEDING DISCONTENT—A Madison Avenue executive suggests making Americans "discontented with living in antiquated, impractical, uneconomical" homes through a multimillion-dollar advertising campaign. It could be financed by an assessment on every house constructed by members of the National Association of Home Builders, suggests adman Ernest A. Jones. His audience: the National Executive Marketing Conference on Homebuilding, held in St. Louis last week.

HAWAII WANTS IN—The Aloha State wants in on federal Interstate Highway System money—and on a retroactive basis. Hawaii's Senator Long points out that his state pays the same taxes as mainland states to finance the system, but receives no benefits. Commerce Department has been directed to report on the matter in January—and to include Alaska also.

GLEN CANYON STRIKE GOES ON—Chances of quick settlement of the Glen Canyon Dam strike, now entering its 13th week, dimmed last week. The Bureau of Reclamation said it wouldn't commit the government to a wage increase that would add an estimated $5 million to project labor costs. The increase reportedly represents the unions' minimum settlement position. It apparently calls for higher basic rates in lieu of subsistence pay, which the unions want. The U. S. is committed to bear 85% of the cost of any wage increase, but the bureau says it is not liable for subsistence costs. Merritt-Chapman & Scott is the general contractor.

COMBINATION SCHOOL BIDS—For the first time, New York City will take lump sum bids for four schools as a single construction contract package. Total estimated cost of the four schools is $8.7 million. The object is to attract more qualified bidders and hold down costs. The Board of Education will open bids October 15.

SPREAD FOOTINGS FOR HUGE PRATT & WHITNEY PLANT ARE DUG "IN THE DRY" IN FLORIDA'S EVERGLADES...

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WASHINGTON OBSERVER

- **Coming: Airborne housing census**
- **Eisenhower presses for steel settlement**

● **Washington is taking to the air to gather construction statistics.** Photogrammetry is being tried to count new housing starts in four areas this month. Kucera and Associates of Cleveland has contracted with the Census Bureau to do the work.

The test is aimed at improving housing starts figures. The photographs will also be used to check estimates of dollar volume put in place in a given month for all types of construction.

Photo mosaics will be made up and interpreted twice during the experiment. First photos are being taken this week. The same area will be covered at the end of the month. The two annotated maps will show construction starts. The four areas are spotted in Ohio, Pennsylvania, Maryland and South Carolina. These areas represent a variety of conditions that may have contributed, in the past, to inadequacy of counting starts from the ground only, statisticians say.

Two main results are hoped for from the photogrammetric test: to find out how accurately the job can be done by aerial photography; and, of course, to test the accuracy of ground counting. It is expected that photographs will reveal construction that ground observers cannot see as they drive along roads and lanes in remote areas.

If the method proves out, it will probably be used as an additional tool by the bureau. It would not replace ground counting, however.

Census Bureau got additional money from Congress this year to improve construction figures after the Commerce and Labor departments traded statistical chores. Census now has all construction statistics, including housing starts, formerly prepared by the Bureau of Labor Statistics. The Labor Department has been given unemployment statistics.

—

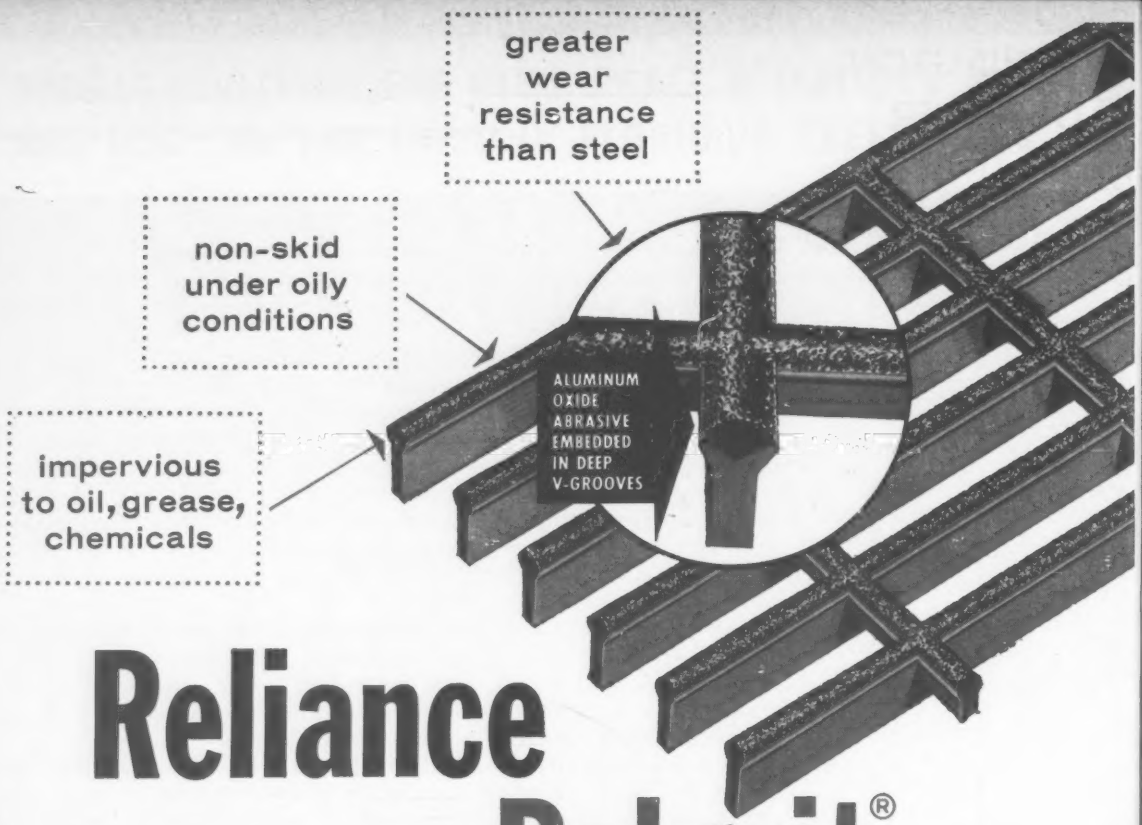
● **Direct federal intervention in the prolonged steel strike appears to be near.** President Eisenhower—as a result of reports he has received on the strike's impact—seems convinced the time has come for action.

Taft-Hartley's 80-day injunction is one tool the President has. That would put the industry back into production, with some supplies moving to customers after a two- to four-week start-up period. Fabricated structural steel would take at least six weeks to get to construction job sites. But Washington observers see little evidence that forcing renewed production would contribute much to a settlement of the strike issues.

Another approach is White House intervention—using the power of the Presidency to suggest a basis for settlement. Mr. Eisenhower throughout his administration has found this alternative distasteful—he has often criticized the method used by his Democratic predecessors. But now he is "sick and tired" of the lingering dispute, and may be persuaded to take the direct course.

The steel workers don't want Taft-Hartley intervention. They do want direct White House arbitration.

The steel companies have the reverse attitude. Reason: Taft-Hartley provides for a vote of the members on the last offer, which is what industry wants to force. White House intervention, historically, has brought generous recommendations for a settlement.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Too Many Frills on Interstate?

- **President Eisenhower has started an investigation to find out if Interstate designs are too fancy. Congress is looking too.**
- **They're concerned about the rising cost of the system. It shapes up as a classic battle between the bookkeepers and designers.**

The President's investigation, plus Congressional screenings, will bring the Interstate Program under the closest scrutiny it has ever had.

President Eisenhower got into the act last week when he signed the new money-raising bill for the road program. He disclosed that he had ordered a "comprehensive review of the Interstate Program's current policies, practices, methods and standards."

Key area for investigation is this: Are the states upping the cost of the program by adding unnecessary frills?

This brings up again the question of whether there is enough Washington control over state-approved designs of the Interstate mileage.

A survey by the Bureau of Public Roads shows that almost without exception the states are building roads beyond BPR's minimum standards.

Mr. Eisenhower says: "If actions are needed to insure that our national objectives are being achieved at minimum federal cost on a pay-as-you-go basis, it is expected that the necessary recommendations will be developed by this study."

The President's study is headed by Maj. Gen. John S. Bragdon, Special Assistant to the President for Public Works Planning. Secretary of Commerce Fredrick H. Mueller and Budget Director Maurice Stans will help.

General Bragdon told ENR he hopes to make an interim report by mid-December and a final report by spring.

Criticism of the program's cost came hot and heavy during the debate over financing this summer. Frequently heard was the complaint that the states may be frosting highway design beyond actual needs, since the federal government was paying 90% of the cost.

Budget Director Stans reportedly has made it clear he thinks there are ways to save money in the program through more austere designing—cutting out the "fancy figure eights and trimming the frills."

The general tone of the investigation is not so much a hunt for "scandals" as it is a critical look at how the program is administered—whether the Bureau of Public Roads is holding a tight rein on the states or giving them virtually anything they ask for in highway design.

The outlook is for a classic battle between bookkeepers and designers.

One side feels that the treasurers (Messrs. Bragdon and Stans) are trying to tell the engineers (Bertram D. Tallamy and BPR) how to run an engineering job.

The opposite view: "The engineers have to be brought down to reality—to do their designing with a continuous eye on costs."

As the White House investigation starts to roll, Congress is ready to run its own check on the road program.

Rep. John A. Blatnik (D., Minn.), head of the House Public Works Special Subcommittee set up to investigate the road program, is out to gather "solid facts" and then hold public hearings early next year.

The House Ways and Means Committee plans to dig into the highway program, too—starting next month.

Here are the major points of expected controversy:

• Urban Interstate construction versus rural roadbuilding is becoming a hot subject.

One camp claims that too much money is going for high-cost, low-mileage urban projects instead of for "connecting" the major cities across the nation, originally outlined as a prime goal of the program. Some reports have attributed this view to top-level Administration sources.

The other camp says there is not enough money going into urban construction where traffic is heaviest.

Advocates of more urban construction point out that about 49% of the traffic on the Interstate roads is in urban areas. Thus urban motorists pay half the taxes for the Interstate.

Urban mileage on the Interstate amounts to some 11% of the 41,000-mile network. But the high cost of urban construction is expected to eat up around 42% of the $40 billion needed to build the Interstate net.

• The matter of building Interstate highways into the downtown area of cities has come up for criticism, too.

One complaint is that downtown construction adds to the cost of the program—paid by all motorists—and only benefits a few. Such roads, it is argued, should not get a full 90-10 funding.

But BPR says in-city roads are in line with stated goals of the program.

Plush design has been a running problem with BPR since the program began. Consistently, a top BPR spokesman says, the bureau has to tell states to keep their designs simple and junk plans for complex structures.

One key item is the matter of interchanges. States have a tendency to go to complex clover leaf arrangements, BPR charges. The bureau, however, wants them to stick to the simpler diamond-type interchanges where these will serve traffic needs.

States also stray from BPR policies in right-of-way acquisition. BPR-recommended width for, say, a four-lane highway, is a 150-ft right-of-way. Almost all states, however, have traditionally bought 250 to 300-ft rights-of-way.

A top BPR official estimates that an over-all saving of 1% to 2% could be made in the total cost of the program if states stuck to minimum right-of-way purchases.

State practice on such things as lane widths, shoulder widths, grades, and design speeds, also creep above the minimum requirements spelled out by the Bureau of Public Roads. States are also charged with a tendency to garnish Interstate projects with such things as elaborate lighting, guard rail protection, roadside plantings, with the federal government picking up 90% of the tab. In many cases, federal-aid participation on such frill items is withheld, or given only in limited amounts. But one argument is that the federal government picks up a far bigger share of this cost than it should be doing.

Bulldozer plugs a channel before erosion gets out of hand.

Quake Lake Emergency Over

Army Engineers have Quake Lake's emergency spillway channel reasonably well stabilized. Hastily built across the huge earth mass that dropped into the Madison River canyon after the earthquake in Montana last month, the spillway is reported holding up fairly well. However, crews are still dumping rock to strengthen weak spots and stop erosion (picture).

The Engineers are now testing the spillway with heavier flows. They are also starting a long-range study of the slide under the guidance of a board of consultants: Karl Terzaghi and Arthur Casagrande, of Harvard University; Lorenz G. Straub, of the University of Minnesota; I. C. Steele, of Oakland, Calif.; and Edward B. Burwell, Jr., of Upperville, Va.

On the consultants' advice, the Engineers have begun to lower the spillway crest (hence the hydraulic head) by bulldozing a series of cuts across the flow path. Draglines will later replace the partly submerged dozers. (Earlier quake stories in ENR: Aug. 27, p. 25; Sept. 3, p. 23; Sept. 10, p. 26.)

Expressways No Congestion Cure

Public works officials have given up on expressways and off-street parking as the cure for downtown traffic congestion. Or so it seems from statements made last week in Seattle at the 65th Annual Public Works Congress and Equipment Show of the American Public Works Association.

Jean L. Vincenz, director of public works for San Diego County, Calif., and new president put it this way:

"We can't keep spending tremendous sums to provide greater capacity on freeways and for parking. People must adapt themselves to mass transportation. There is no other way out."

Mayor Ben West of Nashville, Tenn., chairman of the National Committee on Urban Transportation, cited the urban transportation problem as being "much more complex and far more important now than at any other time in our history."

"The economic and social health of cities and metropolitan areas is at stake," Mr. West declared. "Attempts made during the past 10 or 15 years to relieve traffic congestion by bringing street and highway capacity abreast of increasing auto use have often ended in disappointment and frustration."

The one way to meet the problem is to "establish a sound study and planning program," in which cities will cooperate with counties, transit managements, state highway departments and the U. S. Bureau of Public Roads, Mr. West declared. Nashville, he pointed out, is the first city in the United States to undertake a complete metropolitan study of transportation.

One day of the three-day conference was devoted exclusively to four concurrent forums on solid wastes, streets and highways, water and sewage, and building and equipment.

Mr. Vincenz has been in his San Diego post since 1947. He formerly served as commissioner of public works, city engineer and manager of utilities at Fresno, Calif., and from 1941-47 was a branch chief in the Office of the Chief of Engineers, Washington, D. C.

Leonard W. Chapman of Walnut Creek, Calif., was awarded the $1,000 1959 Engineering News-Record Aid-to-Education Award (see p. 70).

More Missile Work

Pentagon asks ICBM bids, Nike sites announced

Two more major construction jobs for intercontinental ballistic missiles have just been advertised. Their total value is about $60 million.

The Department of Defense also authorized construction of five more sites for the Army's Nike-Hercules antiaircraft missiles. Construction costs at each of these sites will run from $3 million to $4 million.

Underground facilities for nine Titan ICBMs will be built at Ellsworth Air Force Base, near Rapid City, S. D. The job will consist of three Titan complexes. Each complex will consist of three 165-ft-deep silos for housing the missiles, equipment and propellant terminals, a powerhouse, a control center and a retractable radar antenna. All will be interconnected by tunnels. Bids on this work will be opened November 16.

Launching facilities for nine more Atlas ICBMs will be built at Francis E. Warren AFB, Cheyenne, Wyo. This will bring the Warren Atlas strength to 24, making it the free world's strongest missile base.

The new launchers for the 121-ton Atlas missiles at Cheyenne will be different from those already under construction or completed. They will be spotted singly, instead of in groups of three, six or nine. The launching sites will spread out as far south as Fort Collins, Colo., and as far east as Kimball, Neb.

Unlike the previous launchers, which have little or no protection from air attack, the new Atlas launchers will be either bulwarked with earth or placed flush with ground level. Bids on the Atlas work at Warren AFB will be opened November 4.

The latest Nike-Hercules sites will go up close to Strategic Air Command installations at Davis-Monthan AFB, Tucson, Ariz.; Minot AFB, Minot, N. D.; Mountain Home AFB, Mountain Home, Idaho; Malstrom AFB, Great Falls, Mont., and Glasgow AFB, Glasgow, Mont.

Dates of bid invitations and openings on this work have not yet been announced. Construction of these Nike-Hercules sites will begin late this year or early in 1960. They are scheduled for completion in 1961.

The Army has canceled plans to build Nike-Hercules sites near five other Strategic Air Command bases: Lockbourne AFB, Columbus, Ohio; Grand Forks AFB, Grand Forks, N. D.; Bunker Hill AFB, Bunker Hill, Ind.; Warren AFB, Cheyenne, Wyo., and Blytheville AFB, Blytheville, Ark.

Needed: Landing Space for Helicopters

More heliports are needed if more helicopters are to be used in urban areas.

The copter is continually being improved. Its safety and utility have been proven. Techniques for building heliports have been developed. But the bottleneck seems to be a lack of agreement on fire, safety and building code standards.

That was the sense of a two-day session on planning and designing of urban helicopter facilities held last week in Los Angeles. It was sponsored by the Los Angeles Chamber of Commerce. Purpose: To bring together architects, engineers and civic officials with helicopter operators and manufacturers in an effort to break the heliport construction bottleneck. The conference was attended by about 200, almost one-fourth from outside California, some from foreign countries.

The main problem in urban areas is development of "helistops"—rooftop facilities for transfer of passengers and cargo. Standards for such facilities are more difficult to determine than those for "heliports"—complete facilities for parking, fueling and repairing the machines. Heliports can be provided economically only at ground level.

Rooftop facilities do not add any significant amount to the cost of structures, according to George E. Brandow, Los Angeles consulting structural engineer. The Los Angeles building code now requires a 100-psf live load design for rooftop helicopter facilities. But an 8,000-lb helicopter places only a 5-psf average load on the 40-ft square that must be provided for it. Thus it might be reasonable to reduce the 100-psf requirement.

Impact loads are not critical, Mr. Brandow says. There seems to be agreement that design impact load for skid type machines should be 1.5 times the weight of the machine, which ranges up to 3,000 lb. Larger helicopters have wheel-type landing gear. Impact design load for such machines should be 0.75 times the weight of the machine. Normal roof deck design can resist these impact shear stresses, according to Mr. Brandow.

Fire and safety requirements were covered by Battalion Chief John G. Degenkolb of the Los Angeles Fire Department.

For rooftop facilities, the fire official cited these needs:

- A location that provides an alternate emergency landing area, reasonably clear, for use in case of power failure.
- A rooftop area at least 50 ft square with free access from all sides for a 36-ft rotor diameter.
- A fence or parapet wall surrounding the touchdown area and landing pad elevated above the roof itself.
- Drainage facilities to prevent gasoline spills from entering sewers.
- Two exits remote from each other, not counting elevators and fire escapes.
- Adequate fire protection equipment, including wet standpipes, hoses and dry powder type extinguishers.
- No light standards, roof vents, guy lines, TV aerials or other rooftop obstructions within the required glide slope (usually 8 horizontal to 1 vertical) or within a 270-deg arc.
- A telephone or fire alarm box.

Some of the items requested by Chief Degenkolb were challenged by architect Phillip J. Daniel of Daniel, Mann, Johnson and Mendenhall, who served as general chairman of the conference. Mr. Daniel particularly challenged need for alternate landing sites.

The suggested safety requirements were challenged even more vociferously by Hal C. Conners, manager of a large charter service in the Chicago area. Mr. Conners cited a record of 11 years of service using more than 100 different landing sites, many located on rooftops, without a single accident damaging life or property. And, according to Mr. Conners, most of the suggested safety facilities were nonexistent.

Although admitting the importance of design and code requirements, a different approach to the development of urban helicopter use was presented by James C. Buckley, New York consulting engineer. He urged important urban centers to underwrite or subsidize construction of primary heliports, just as for airports. He recommended, first, an adequate master plan, then, establishing helicopter facilities at airline airports and in the central business district. Secondary subsidized heliports are needed in many urban areas, particularly those "stretched out" or split by natural barriers such as rivers.

Other facts developed:

- There are only three regularly scheduled helicopters in service in the U.S.—in Los Angeles, Chicago and New York City.
- Helicopters in routine use have a remarkable safety record.
- Helicopters are available—some are on order—that will carry up to 40 passengers at nearly 200 mph and will compete with short-haul, fixed-wing plane schedules.
- Operation is expensive, compared to surface transport. Even small choppers cost far in excess of a dollar-a-minute to operate.

Design Contracts Let For Desalting Plants

The Interior Department has made design commitments for the first three of five U. S. plants to convert salt water to fresh. Designs are expected to be ready early next year.

W. L. Badger & Associates, Ann Arbor, Mich., received a $62,000 contract to design the long-tube, vertical multiple-effect distillation plant to be located at Freeport, Tex. Fluor Corp., Los Angeles, got a $102,000 contract to design the multistage flash distillation plant to be built on the California coast.

The Bureau of Reclamation at Denver will design an electrodialysis plant for conversion of brackish water. Six sites are being considered: Lincoln, Neb.; Eureka, Miller and Webster, S. D.; Ellendale and Devils Lake, N. D.

Builders whipped San Francisco's new baseball stadium into shape in time for the World Seri[illegible]t . .

Giants' New Park: 45,000 Seats All

Precast frames carry rear of upper tier and wind baffles.

For a long while this summer baseball's San Francisco Giants looked like better World Series prospects than did the team's new concrete stadium, Candlestick Park. The pennant battle was no more tense than the civic and professional hassles that accompanied stadium construction.

Now at World Series time, the stadium is ready, but the Giants are out.

Candlestick Park, which went under construction nearly two years ago, was originally scheduled for completion last spring. It was the bait that brought the Giants from New York to San Francisco after voters approved a $5-million construction bond issue. Final cost will be closer to $15 million.

Among the complications delaying construction: a teamster strike that halted delivery of materials; a much-publicized argument between the

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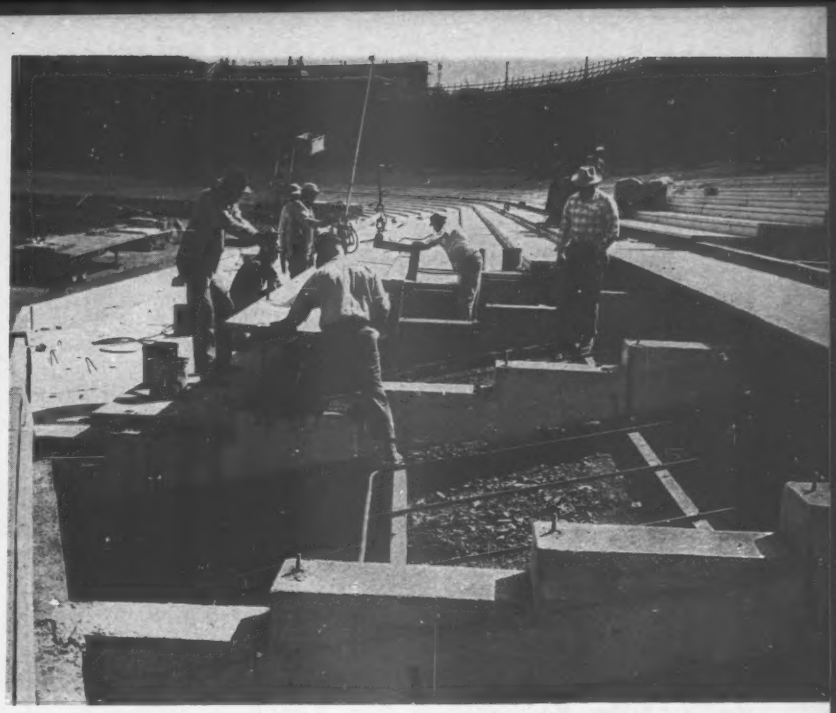


Seat slabs rest on grade beams over radiant heating pies.

l Seri**ut . . .**

ts All Empty

architect, John S. Bolles, and the contractor, Charles L. Harney, who has complained of incomplete plans; and a grand jury investigation challenging the project's financial feasibility.

Typical of the disputes was the contractor's refusal to put in foul poles and a backstop without extra pay—they were not included in the architect's plans.

The finished job, however, is the most modern ball park in the major leagues. The structure itself will have cost about $6 million by the time all the finishing touches are on. Site development and parking areas run another $5 million, with the balance of the $15 million going for approach roads and utilities.

The stadium includes two main levels of seats with a mezzanine for press and radio and exclusive loge seats.

Seat slabs are precast, some of them prestressed. Lower level seats are based on grade beams spaced on 12-ft centers. These beams are topped by precast—not prestressed—seat support units, 24 ft long. The seats are attached to the 2½-in.-thick, 2-ft-9-in.-long precast units.

The upper deck is supported by portal frames on 48-ft centers.

One column of the rectangular-shaped frames is a 12-in.-dia solid steel shaft. Below the lower deck level, the column is a reinforced concrete unit.

The top horizontal member of this frame is prestressed. This is largely because it is a massive tension unit. But it is also because at the forward end it bends into a direct cantilever support for the upper level seats. This cantilever extends 21 ft out from the 12-in.-dia solid-steel column.

The steel columns support alternate frames. Thus the upper level precast seat support units span 24 ft. And to accomplish this they are pretensioned.

A series of precast inverted V units rise at the back of the stadium above the upper level support frame to support the top of the upper tier. These precast units are 24 ft high, with maximum cross section 16 in. by 2 ft 9 in. Advantage of the diagonal arrangement lies in reduction of moment connections in the concrete assembly. These units can efficiently support both horizontal and vertical loading.

The upper tier is topped by a wind baffle consisting of precast C-shaped units supporting precast and prestressed double T members.

More than 20,000 seats of the open-air stadium are underlain by a radiant heating system. Summer nights can be cool in San Francisco. For the lower level, heating pipes are suspended in the 18-in. space between ground level and the precast seat slabs. For the upper level they underlie only the first eight rows of box seats.

The stadium is a project of the San Francisco Park and Recreation Commission. Financing in addition to the bond issue amount was provided by San Francisco Stadium Inc., which has leased the 77-acre site for 50 years. This organization has in turn subleased the stadium to the San Francisco Giants for the next 35 baseball seasons.

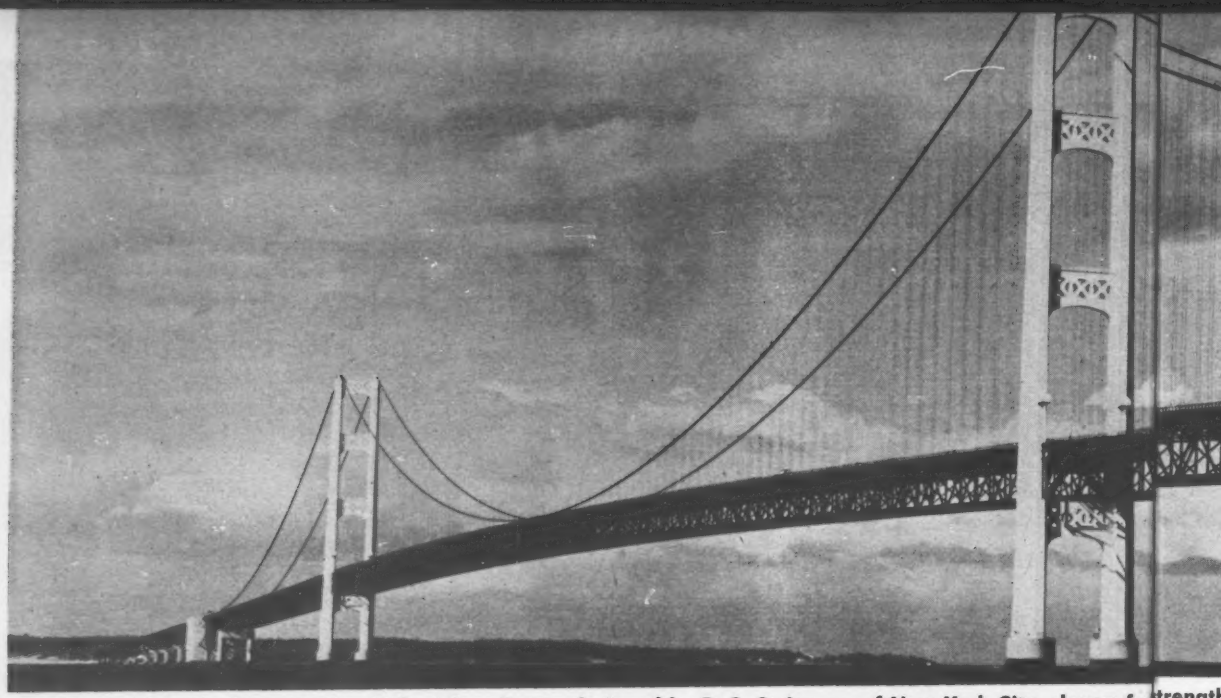
Designers of the stadium are Mr. Bolles and E. Elmore Hutchinson, engineer, associated. Chin & Hensolt are the structural engineers.

Philadelphia Starts Up Huge Filtration Plant

A new $25-million filtration plant started pouring water into Philadelphia mains this week.

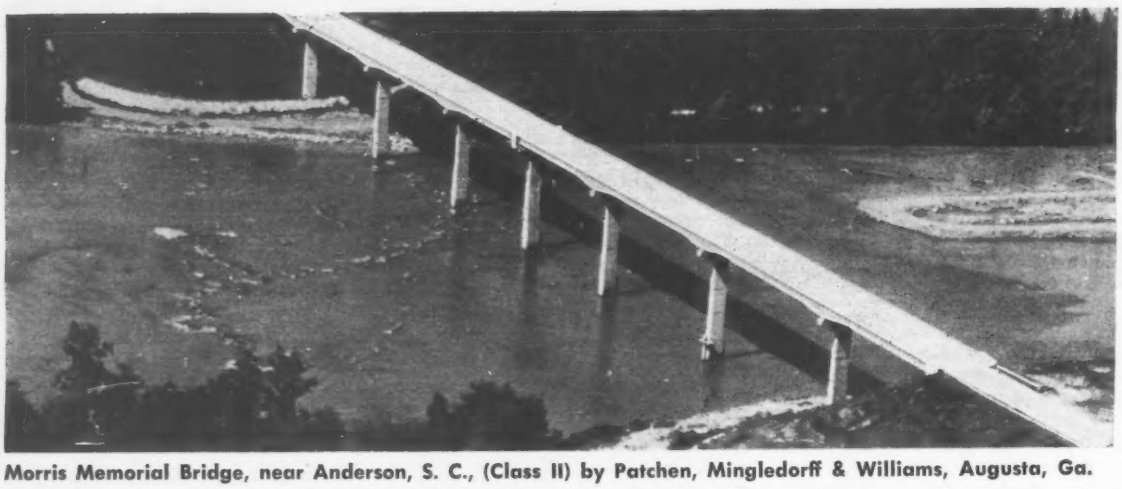
It has a normal capacity of 282 million gallons a day and a maximum output of 423 mgd. Filtration rate, chemical feeding and various other operations are handled by automatic and semi-automatic controls.

Consultants to the city on design of the new plant were Morris Knowles, Inc., Pittsburgh engineer, and Walter Antrim, Philadelphia architect. It was built under 22 separate contracts.

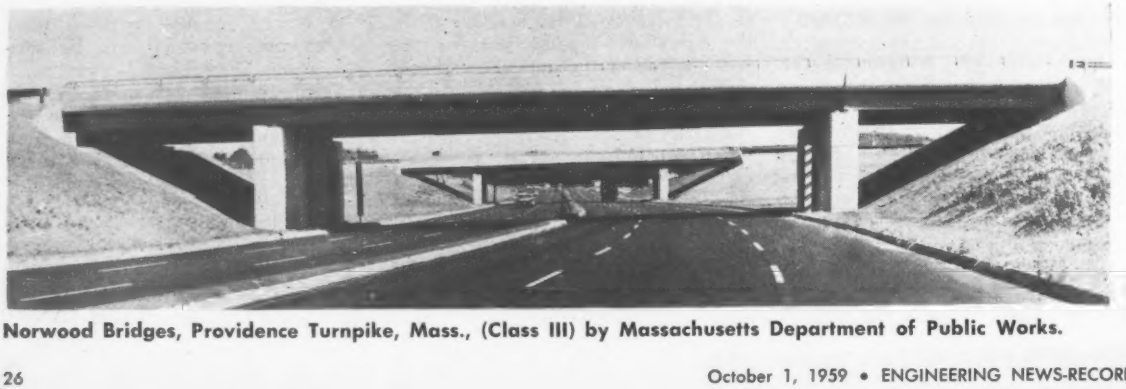


Mackinac Bridge, Mackinac Straits, Mich., (Class I) was designed by D. B. Steinman, of New York City, chosen for strength

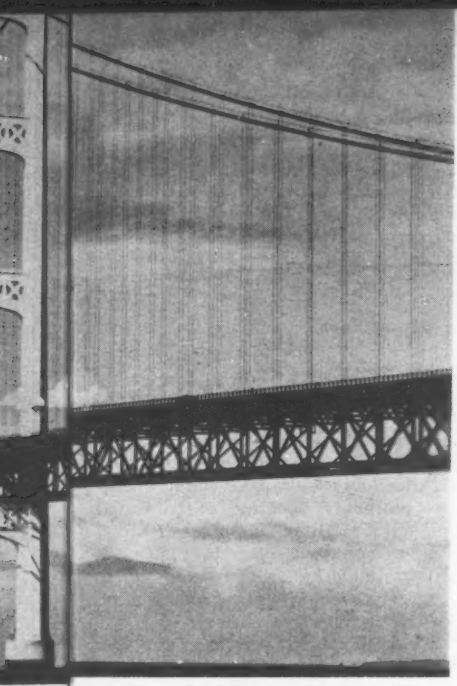
Most Beautiful Steel Bridge of



Morris Memorial Bridge, near Anderson, S. C., (Class II) by Patchen, Mingledorff & Williams, Augusta, Ga.



Norwood Bridges, Providence Turnpike, Mass., (Class III) by Massachusetts Department of Public Works.



sen for trength and noble proportions."

ge of 1958

Thirteen bridges in 11 states were chosen this week as the most beautiful steel bridges opened in 1958. There were 104 entries, the largest ever in the 31-year-old competition. American Institute of Steel Construction is sponsor.

The outstanding bridges in each of three classes are pictured.

Honorable mention awards went to:

Bridges with spans of 400 ft or more (Class I); Greater New Orleans Bridge, designed by Modjeski & Masters, Harrisburg, Pa.

Bridges with fixed spans under 400 ft, costing more than $500,000 (Class II): South Fork Eel Bridge, Dyerville, Calif., by the California Division of Highways; Clark Fork Bridge, Trout Creek, Mont., by Ebasco Services Inc., New York City; Vine St. Bridge, Philadelphia, by Modjeski & Masters; Manahawkin Bay Bridge, Ocean County, N. J., by N. J. State Highway Dept.

Bridges with spans under 400 ft, costing less than $500,000 (Class III): Bus Bar Bridge, Muscle Shoals, Ala., by Tennessee Valley Authority; Lawrence Ave. Grade Separation, Chicago, by Cook County Highway Dept.; Marsh Road Overcrossing, Redwood City, Calif., by Calif. Div. of Highways.

Bridges with movable spans (Class IV): Tenth St. Bridge, Port Huron, Mich., by Hazelet & Erdal, Louisville; Pelican Island Causeway, Galveston, Tex., by Parsons, Brinckerhoff, Hall & Macdonald, New York City.

Work Resuming at Mayfield Dam

After a three-year shutdown forced by fish and game interests, construction of Tacoma City Light's Mayfield Dam is expected to start up again before the end of the year.

The city is taking bids on a new general contract in mid-October, despite the threat of a pending popular vote aimed at outlawing the project.

The new contract will be for completion of work started by the L. E. Dixon-Arundel Corp. under a $10.9-million contract awarded in 1955. A court order led to cancellation of that contract after Dixon-Arundel had done about $7 million of work.

Mayfield is the first dam in a $129-million, two-dam project planned for the Cowlitz River 60 miles south of Tacoma. The second dam will be upstream at Mossyrock. The project is designed to produce 460,000 kw on completion, scheduled for 1965.

Work already has been resumed on an 860-ft tunnel for the project. Yardley Construction Co., which brought the tunnel within 15% of completion before work stopped in 1956, received a $130,000 contract last spring to finish the job. Tacoma thus was able to meet the Federal Power Commission requirement that work be re-started on the project before July 1.

Unless Tacoma succeeds in efforts to block a scheduled initiative on constitutional grounds, next year's general-election ballot will include a proposal aimed at killing the project. The Washington State Sportsmen's Council obtained the necessary signatures to send the initiative to the legislature early this year. The legislature failed to act on the measure, thus automatically referring it to popular vote.

Tacoma officials don't believe the project will be affected, even if the initiative gets on the ballot and wins approval. They are banking on the fact that the U. S. Supreme Court has upheld the city's right to build two dams on the Cowlitz.

A $10-million block of revenue bonds to finance the renewed construction is scheduled for sale before the end of the year. City officials hope the matter of the initiative can be cleared up before the need arises for more bonds.

As long as the initiative is pending, the city probably will have to pay higher interest rates on the bonds, but Tacoma utilities director Dean Barline has convinced the city that if it waits for lower interest rates, it will probably face higher construction costs.

Mayfield's fish-handling facilities have now been redesigned in an attempt to placate sportsmen, who have been fighting the project ever since it was first proposed. Fishermen cherish

the Cowlitz as the last remaining natural salmon spawning stream emptying into the Columbia River below the series of great dams built in recent decades. They made their first attempt to forestall construction of dams on the Cowlitz when they persuaded the 1949 Washington legislature to adopt a height limit of 25 ft for dams on Columbia tributaries below McNary Dam.

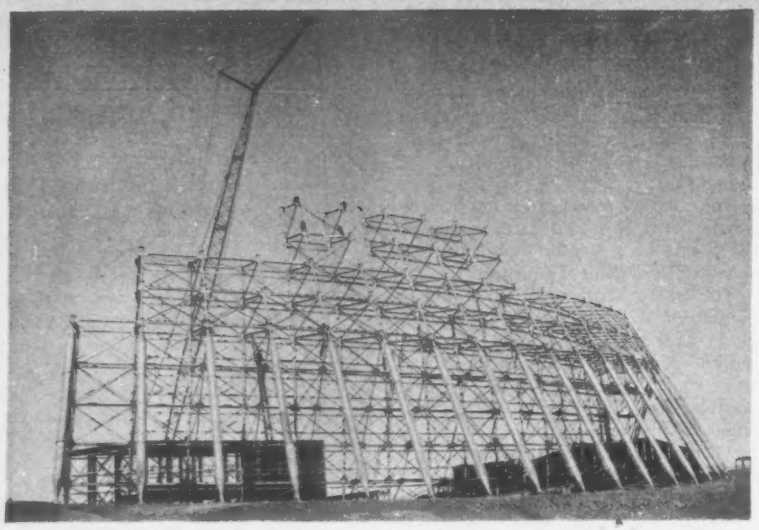
By that time, Tacoma had already applied to the Federal Power Commission for permission to build the two Cowlitz dams. FPC granted the license in 1951. Before starting construction, however, the city went to the courts to test the validity of prospective bond issues to finance the project. The U. S. Supreme Court ruled favorably in 1954. Later the city sold a $15-million issue and awarded the Dixon-Arundel contract.

An ensuing series of legal maneuvers based on state laws culminated in a complete shutdown of the job in the fall of 1956 and cancellation of the general contract in 1957.

The next year, however, the U. S. Supreme Court gave the project a shot in the arm with a ruling that no state law could prevent construction since the federal government has jurisdiction over the Cowlitz as a navigable stream. The ruling also affirmed Tacoma's right to condemn state-owned property for the project, a right denied earlier by the Washington State Supreme Court.

Because of the long delay, the Tacoma Utility Board had to get the FPC to amend the license and permit completion later than scheduled.

Mayfield will be a concrete arch dam with gravity wings and thrust blocks. It will have a structural height of 235 ft and length of 850 ft. Reservoir capacity will be 127,000 acre-ft. The powerhouse will be equipped with four 55,000-hp turbines and four 40,000-kw generators. Turbines and generators will be bought under separate contract.



Warning Sentinels Against ICBMs

Rising into the Arctic sky in northern Greenland, this huge antenna—as big as a football field standing on end—will send out radar beams to detect ballistic missiles as far away as 3,000 miles. Four such antennas are included in the Greenland installation and four more are under way at an Alaskan site. They are part of the billion-dollar Ballistic Missile Early Warning System (BMEWS), designed to afford 15-minute warning in case of an attack.

Design and construction of BMEWS, and of unusual new DEW Line buildings on Greenland's ice cap, will be covered soon in an article by ENR Editor-in-Chief Waldo Bowman, who recently made a Greenland-to-Alaska inspection trip. The article is awaiting clearance by the Defense Department.

Around the Country . . .

• **Million-dollar garage**—The First National Bank, Minneapolis, has started construction of a 700-car parking garage, the seventh major new ramp to be started in the city's downtown area since 1950. The new garage will be five stories high, but will have six levels of parking. Cost is estimated at more than $1 million.

• **Cheaper by the county**—A county-built road bridge in Hillsborough County, Fla., is estimated to have cost $6,000, while the going price for such a bridge under contract has run to $15,000. County engineers designed the 54-ft-long, concrete-pile-and-deck structure; county labor and equipment were used to build it.

• **Revolving door**—The Ohio State Highway Department has undergone its biggest turnover in 10 years with the addition of 3,700 new names to its payroll. Total number of employees, however, has been reduced from 9,224 in January to 9,039 in September.

• **A big reward**—If Ohio municipalities develop their own master plans for arterial highways, the Ohio State Highway Department will "pay" 75% of the planning costs by crediting the municipality on its next state highway roadway project. Aim: to speed building of feeder lines to expressways.

• **More rewards**—Under an act passed in 1951, North Carolina municipalities will pick up $6.8 million from the State Highway Commission for maintaining non-highway system streets during 1959. This is 4% over last year's amount. One-half cent of the six-cent-per-gallon state gasoline tax is set aside for this purpose.

• **UEC groundbreaking**—Construction began this week on the United Engineering Center in New York City. Former President Herbert Hoover and a freshman engineering student, Jerry Fujimoto, Rensselaer Polytechnic Institute, broke ground for the 18-story, $12-million unit.

Midyear Worries

Fight for road money concerns AGC meeting

Even with federal roadbuilding funds now assured and a new labor reform law on the books, contractors are concerned about the outlook for their industry.

This was evidenced in formal reports and casual conversation at the Associated General Contractors midyear board meeting in Kansas City, Mo., last week.

Admittedly, the general climate of this year's meeting was considerably more optimistic than last year's in Atlanta (ENR Oct. 2, 1958, p. 21). Contractors then were worried about "profitless prosperity" because of cut-throat competition at the bidding table. Moreover, the prospects of getting adequate federal funds for the Interstate Highway Program, and a stronger labor bill were then cloudy.

Today, we have both the new labor law and assurance that federal road money will be forthcoming.

But the contractors and AGC officials view the recent fight for additional national gasoline tax revenue as only the beginning in a running battle.

"More attention must be given to the problem of adequate highway funds at both the national and grass-roots levels if the Interstate Highway Program is to be kept anywhere near on schedule," said A. E. Johnson, executive secretary, American Association of State Highway Officials.

Under the most favorable conditions, Mr. Johnson predicted, the 41,000-mile system will not be completed until 1977.

The three days of discussions brought out a number of practices and procedures that contractors do not like. To name a few:

They object to a new requirement of the Corps of Engineers for additional superintendents on subcontracted work. The contractors feel that the awarding agencies should not establish rigid requirements governing the number of superintendents.

Two current issues are of considerable concern to highway contractors: the contract control system expected to be put into operation soon by the Bureau of Public Roads for an equitable distribution of Interstate highway funds; the Congressional investigation of the entire highway program, now being organized (see p. 21).

John A. Volpe, of the John A. Volpe Construction Co., Malden, Mass., was nominated AGC president for 1960. M. Clare Miller, San Ore Construction Co., McPherson, Kan., was nominated vice president.

Owner: Salt Lake City Corporation • Architect and Engineer: Ashton, Evans & Brazier • General Contractor: Christiansen Brothers.

For America on the wing, more new facilities rising on

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AMONG the many varieties of foundations installed by Raymond, none is more vital to a growing America than air terminal facilities. Raymond's latest in the field, shown here in this rendering, is the Municipal Air Terminal in Salt Lake City, Utah. Scheduled for completion late in 1960, the Terminal will rest on 380 Raymond step-taper piles, a total of 18,394 linear feet.

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FOUNDATIONS FOR THE STRUCTURES OF AMERICA . . . COMPLETE CONSTRUCTION SERVICES ABROAD

The Christ Hospital in Cincinnati with new wing shown at the right. This is one of the first to use USS TRI-TEN High-Strength Low-Alloy Steel columns to reduce over-all size and cost.

Architects: Harry Hake and Harry Hake, Jr.
Consulting Engineers: Harry Balke Engineers. Steel Fabrication: Indiana Bridge Co. Builder: The Ferro Concrete Construction Co.

High Strength Steel Columns save space and 50 tons of steel

Often terrain and available space limit over-all building size. In the case of this hospital, it was desirable to keep over-all size of the new wing to a minimum and costs as low as possible. USS TRI-TEN High-Strength Low-Alloy Steel wide-flange beams solved both problems.

According to Harry Balke Engineers: "Any savings in depth of the column sections could be reflected directly in the over-all width of the hospital. A savings in depth of column was therefore multiplied 4 times. By using A242 steel (USS TRI-TEN Brand), columns were restricted to 16"x16" maximum width and depth. With A7 steel, the building width would have been 8" wider, adding approximately 1600 square feet of unwanted area, over half of which would be unusable. Approximately 50 tons less steel was required for the columns than would be required with A7 steel and, of course, savings resulted in the substructure as a result."

USS TRI-TEN Brand Steel has a minimum yield point of 50,000 psi—about 50% greater than structural carbon steel. It results in slimmer columns and, in turn, more useable floor space, or smaller exterior building size.

Good weldability. USS TRI-TEN Steel can be readily welded with the usual shop methods. In this building all shop connections were welded, and field connections bolted with high-strength bolts.

When designing a new building or any large structure, investigate the money-saving advantages of USS Special Steels. These include three brands of high-strength steel with minimum yield points of 50,000 psi—USS TRI-TEN, COR-TEN, and MAN-TEN. Where exceptionally high strength is needed, USS "T-1" Constructional Alloy Steel with a minimum yield strength of 100,000 psi will frequently solve a tough problem. For information, write United States Steel, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

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New color movie available—"Challenge at Carquinez."
A 27-minute, 16mm. color film showing the design and construction of the unique Carquinez Strait Bridge. Ideal for engineering groups. For booking information, write United States Steel, Pittsburgh Film Distribution Center, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

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1. Attach tapping sleeve to main.
2. Bolt tapping valve to sleeve.
3. Open tapping valve all the way.
4. Bolt "CL-12" to tapping valve.
5. Make cut into main (as shown above).
6. Close tapping valve completely.
7. Remove drilling machine.
8. Attach branch main to tapping valve.
9. Open valve to put branch in service.

Calked or mechanical joint type sleeves and valves are available in a full range of main and and branch main sizes.
The "CL-12" may be hand operated with a ratchet handle or power operated with an air motor (shown) or gasoline engine drive unit.

The use of Mueller "quality-matched" equipment eliminates the need for extra adapters and fittings and reduces set-up time. The automatic power operation of the CL-12 Machine reduces cutting time, too, and completely frees the operator for other work around the job-site while the main is being cut. *Total on-the-job time is greatly reduced.*

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Conventions: Why Do They Go?

From January to January engineers and contractors breeze in and out of the nation's cities and resort areas going to and from conventions. "Younger men go to hear and talk with men of larger reputation than themselves. Older men go to be in the limelight. And the middle aged go to drink under amiable circumstances." That's how one middle-aged engineer puts it.

But no matter what the age, reports show construction men go to conventions to drum up new business, gain new information, perhaps do some job-hunting, and meet old friends. Some construction people enjoy conventions. Some hate them. But most agree that if they didn't attend, they would deprive themselves of increased knowledge and additional dollars.

Engineers and contractors report that conventions enable them to meet competition. At professional conferences they can promote their products and services. Off-hand conversations often bring in business leads.

M. D. Morris, a New York City sales engineer, figures that if he gets one job from a convention contact his expenses are paid. "If I get two, I'm ahead."

Mr. Morris estimates that in 1958 he attended 10 conventions which took him out of his office 51 days. These conferences ranged from the International Road Federation in Mexico to local meetings of the American Society of Civil Engineers in New York City.

A contractor recalls a convention where he learned of a bakery plant to be built in his locality. With this tip, he contacted the right people and won the contract.

Edward Ordway, a partner in Havens and Emerson, Cleveland engineers, calls convention-going "good public relations."

"You can have a wonderful organization and be a crackerjack engineer, but, if you don't get out and meet people, you're selling yourself short," says Mr. Ordway.

The opportunity to talk shop is another big convention drawing card. From their colleagues, contractors and engineers are able to exchange valuable information. Data on new methods, materials and machines are all cited as important convention benefits.

With the information he gains from papers and discussions, Stephen Olko, New York City consulting engineer, estimates that he can turn one year of his experience into five years.

• **"Which ones?"**—There are many factors that determine whether a business man will attend a convention. Is he free? How far must he travel? What is going to be discussed? Who is going to be there—clients, notable people in the field, old friends?

• **Work or play**—Many men feel they work harder and longer at conventions than they do in their offices. Nevertheless, conventions offer a chance to get away from the toils and tensions of daily routine. "Everyone's more relaxed and so are you," says an engineer.

• **Europe vs U. S.**—Conventions in the United States are more personal and informal than European meetings. European sessions are described as staid and academic. On the other hand, American observers admit, business men on the other side of the Atlantic show greater interest in discussion.

European conferences also pre-publish copies of papers to be delivered. Following this pattern, the American Institute of Mechanical Engineers has initiated a preprint system that gives members an opportunity to think about the topic and form opinions. At the meeting, the subject is covered briefly. Discussion takes up the major portion of the program. As a result, observers find, discussion is much livelier.

• **Better conventions**—Most men would like to see more symposiums on the convention program. "Anybody can read a paper," asserts one business man. "It's the exchange of ideas that's important."

There is also a call for smaller, more specialized sessions. "Large sessions don't give you a chance to ask questions," complains an engineer.

A. E. Dembitz, Chief Civil Engineer for Singmaster & Breyer, New York City, suggests that national meetings might try to generalize their programs with pertinent topics such as, the engineer's role in society, public relations and engineering education for adults.

Grand luncheons and dinners are often considered too time consuming. One of each is enough, say some members. That will leave time for making contacts and meeting clients.

On the whole, construction conventioneers like entertainment. But they want it to be in good taste. They dislike enforced gaiety.

Better visual aids, weekend field trips and fewer meetings are all cited as areas for improvement.

• **Cost**—The money companies spend on conventions varies widely. Reports range from $20 to $20,000 annually. Smaller companies tend to spend between $500 and $1,000. In larger organizations the figures go well into the thousands.

• **Who goes?**—People from all echelons attend conferences. At one moment you are shaking hands with a company president. At the next, you are introduced to a salesman or project engineer. Some companies will send only key personnel—partners, top administrators and vice-presidents. Others wait until an employee asks to be sent.

In most cases, companies do not demand reports from their convention-goers. Whatever is gained at conventions, they say, will show in the new techniques and solutions a man brings to his job.

This cut, 42 ft below water table, is kept dry by unusual dewatering system

Water Removes Water From Dee

An unusual dewatering system has played a large role in putting an $8-million subway construction job 18 months ahead of schedule. The system makes use of high pressure pumps, double pipe lines, well points and eductors.

Eductors are units in which a vacuum is created by the high speed flow of liquid through a jet nozzle. Dentists use them to keep a patient's mouth dry. Wellpoint Dewatering Corp., New York pumping subcontractor, used an appreciably larger version of eductor to keep a deep excavation dry on a 1,350-ft-long subway job beneath Christie Street in downtown Manhattan.

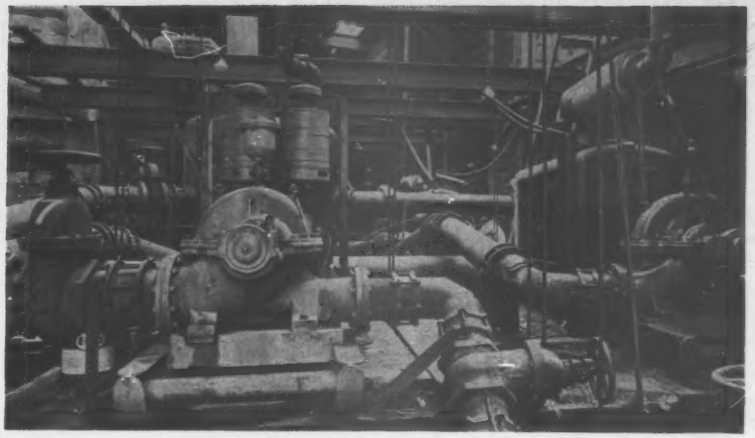
Cayuga Foundation Corp. of New York is doing the general construction work, part of a project that will connect four north-south tracks of the Independent System with four east-west tracks of the Broadway Manhattan Transit Lines. It involves tunneling under a number of existing buildings and an operating subway tube. It also involves cut-and-cover operations up to 76 ft below street level and up to 42 ft below the permanent water table.

In the open sections of the tunnel, Cayuga installed retaining walls consisting of vertical H beams, and horizontal wood sheeting. The beams, driven 10 ft on centers, are 24-in. 117-lb sections up to 110 ft long. The sheeting, set behind the inside flanges of the beams as excavation progressed, is of rough cut 6-in. lumber, separated by short pieces of 2-in. blocking.

Many problems confronted the contractor during the work—and the removal of water was one of the biggest. The wood sheeted retaining walls, the proximity of large buildings and the great depth of the cut made open pumping impossible.

The need for dewatering the area outside the walls called for wellpoints, but this in itself posed two other problems: installing and maintaining the system without delaying construction; and coping with the soil characteristics so as to maintain steady pumping during operations.

Ordinary wellpoints are effective for depths up to about 20 ft. In deeper excavations, it is necessary to pump in stages. Thus when digging is completed to the maximum depth covered by an initial stage, additional stages must be installed successively at lower elevations, as required. This often delays all or part of the work for which the contractor is being paid.



High pressure pumps force water through wellpoint installation

Dual line system was installed during early stages of excavation

eeCut-and-Cover Tunnel

By using eductor wellpoints the contractor was able to handle all his pumping with a single installation, since the effective depth of pumping with eductors is limited only by the volume and pressure of the water flowing through the jets.

For steady pumping with a minimum of expense, the eductor also proved superior to ordinary wellpoints. In ordinary installations, each wellpoint must be constantly "tuned" or regulated so that at no time is any point "working in the dry" or sucking air. This requires round the clock attention and maintenance, for when air gets into the lines of ordinary wellpoint installations, the entire system is disrupted. Pumping becomes erratic causing ground water to rise. Soil investigations at Christie Street showed that tuning would be difficult. Impervious strata of clay lying between strata of silt could well cause an irregular flow of water to the points, even though the points were encased in sand wicks.

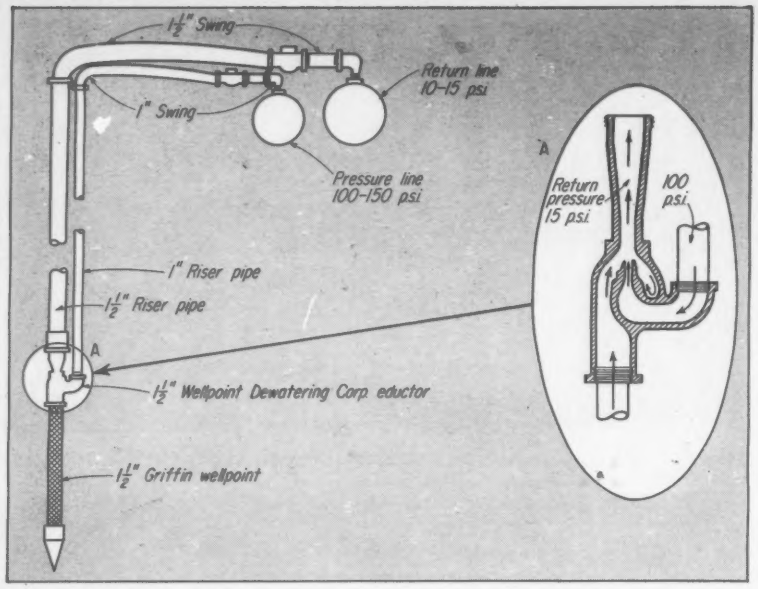
The eductor wellpoint requires no tuning. Any air picked up by a dry point is merely pushed through the lines to the reserve tank where it leaves with the overflow.

The eductor system has one other advantage—since the pumping is done by pressure rather than vacuum, any leaks are immediately visible.

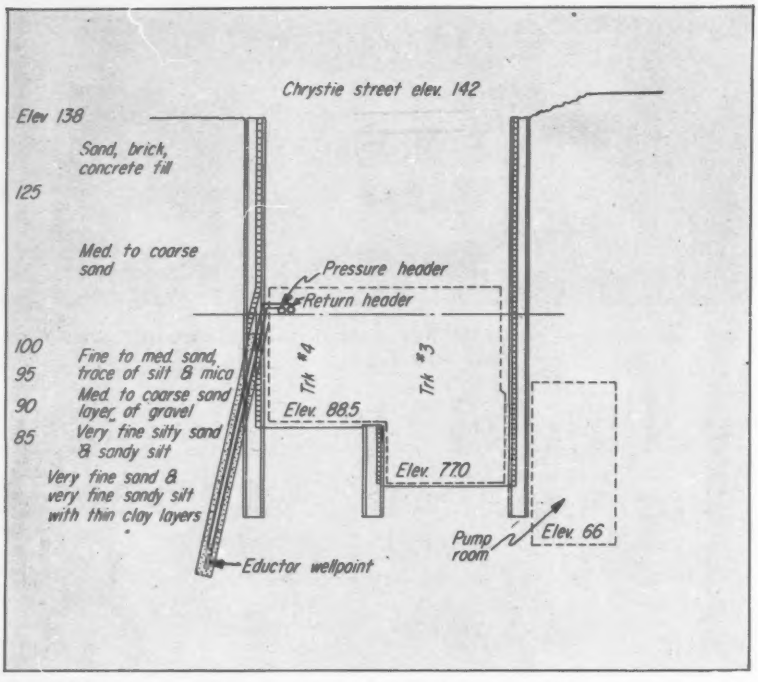
Installation of the wellpoints was difficult. First, 12-in.-dia pipes were driven through pockets in the wall on a 1 on 6 batter. These were cleaned with a water jet, the points were set in them and surrounded by sand. The pipes were then removed, and the points connected to the headers.

Operation of the eductor wellpoints is simple. High pressure pumps force water through a pressure header. Flexible hoses carry the water down into the wellpoints where the eductor turns the flow upward through a jet nozzle. The velocity of water through the nozzle creates a suction at the base of the point that draws in ground water. (The eductors used on Christie Street developed a much higher vacuum than can be developed by any ordinary wellpoint.) The water from both the pump and the ground is forced upward into a return header, which empties into a reserve tank. The fluid needed for continuous operation is returned to the pumps for recirculation within the system; the excess is discharged.

The Christie Street installation is not the first use of eductors for dewatering ground. It is, however, probably the



SKETCH OF RISER shows flow pattern through enlarged eductor.



WELLPOINTS were angled through wall to point below tunnel base.

largest. It comprised 4,000 ft of 8-, 10- and 12-in.-dia pressure header and an equal length of 8-, 10-, 12-, and 16-in.-dia return lines. The water was circulated by three pressure pumps capable of delivering 4,500 GPM at 150 psi. A 1,800 GPM standby pump was also included. There were 650 eductors, each capable of pumping 10 GPM, but the maximum water handled by the system was 1,500 GPM.

The dewatering system was designed by Griffin Wellpoint Corp. of New York. It was installed and operated by an affiliate, Wellpoint Dewatering Corp., under the direction of Richard W. Loughney and Vincent Cummings.

George Schuster, Cayuga Foundation Corp., is responsible for the over-all construction operations.

The project is part of a $93 million improvement program being carried out by the New York City Transit Authority.

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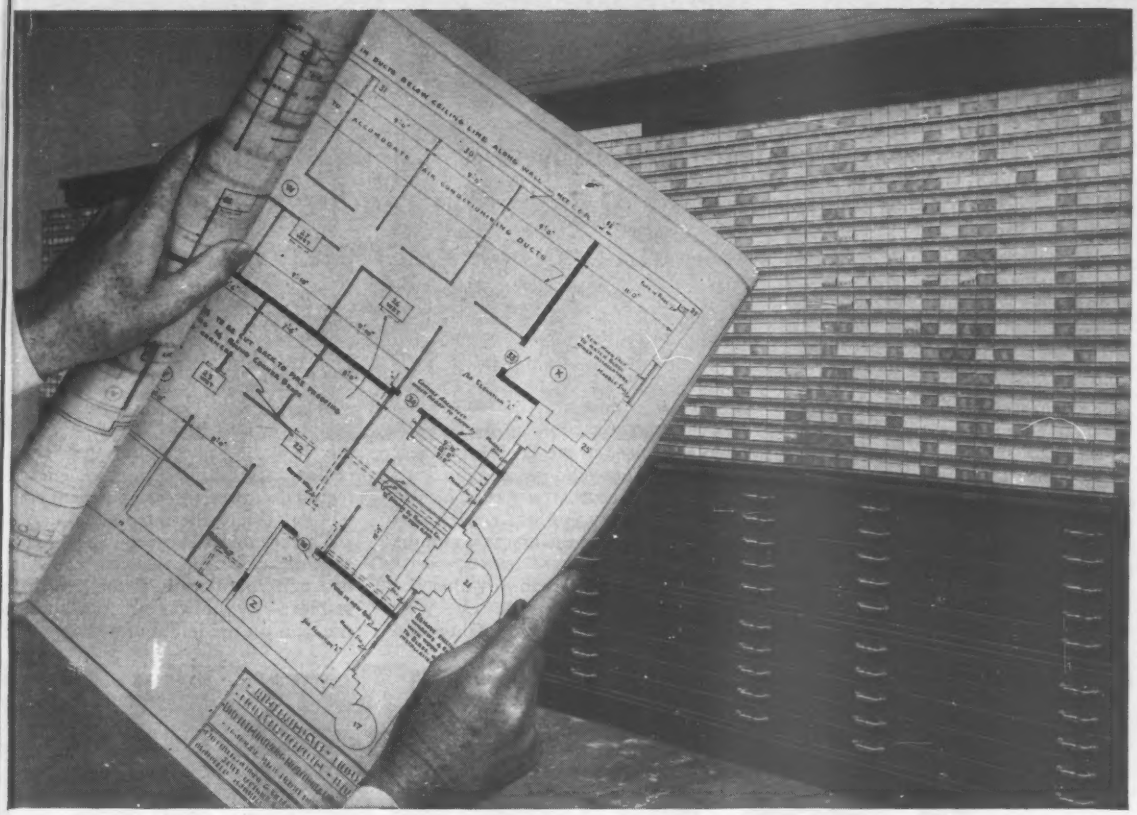

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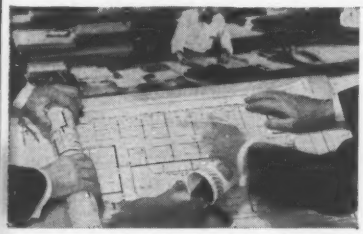

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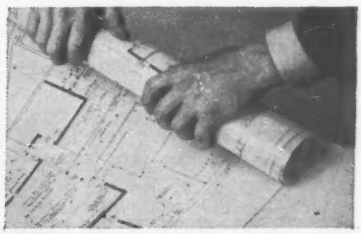

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CONCRETE PERFORMANCE REPORT:

POZZOLITH concrete employed in Tri-Dam Project to meet full range of engineering requirements for all types of concrete specified

The Tri-Dam Project in south-central California is one of the most interesting hydraulic programs undertaken in recent years. Each of the three structures represents a different basic type of dam being constructed in North America today.

Donnells Dam is a graceful concrete arch. Tulloch Dam is a concrete gravity structure and Beardsley Dam a rolled earth fill dam with a concrete spillway.

Though these three dams were designed to provide year-round irrigation for two agricultural districts, the $52,000,000 in bonds required to finance construction is secured solely by future revenues from the sale of the 84,000 kilowatts generated by the three powerhouses.

Over 500,000 cubic yards of concrete were used in the Tri-Dam Project for tunnels, powerhouses and the dams themselves. POZZOLITH was employed in all concrete except for a small quantity placed during the first few months of construction.

Evaluation tests—Shortly after the project began, laboratory tests were made to determine the quality and economy of concrete produced with POZZOLITH using the cement and aggregate already in use on the project. These tests revealed that mixes made with POZZOLITH Retarder would lower the rate of temperature rise in the mass concrete. And by permitting the use of lower cement factors for the same strength, the use of POZZOLITH also reduced the total heat evolved and provided other basic improvements in quality.

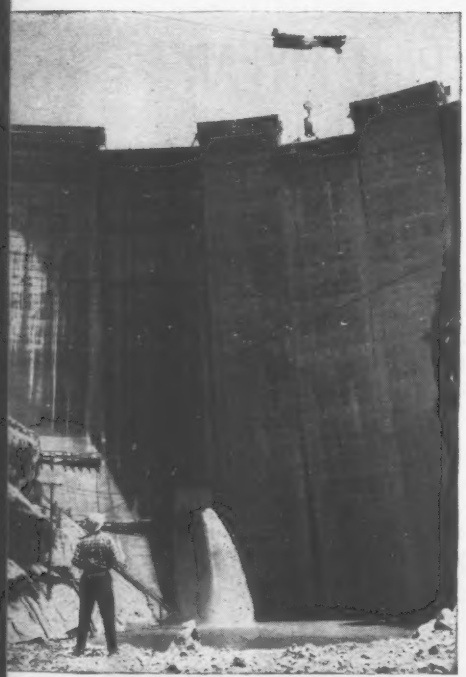
Field trials with these mixes followed. Careful attention was paid to aggregate coating and workability of the fresh concrete and to strength development under job conditions. The excellent results achieved in the laboratory were repeated in the field, and it was decided to employ POZZOLITH in all concrete at Tri-Dam.

The Beardsley Project—The dam is a rolled earth fill structure 1000 ft. long and 280 ft. high with a concrete spillway. Although the volume of concrete placed at Beardsley was small compared to the other two dams, it provided an opportunity to carefully study the economic advantages obtained with POZZOLITH.

Concreting at Beardsley had been underway several months before the use of POZZOLITH was adopted. During this period some 16,400 cubic yards of plain concrete were placed. Subsequently, 21,700 cubic yards of concrete with POZZOLITH were employed for the spillway, penstock and powerhouse with a net savings of $0.171 per cubic yard or a significant $3,710 on Beardsley. The POZZOLITH mix had the same slump and water-cement ratio as the plain concrete but required a lower water and cement content to achieve the same strength.

The Donnells Project—The dam is a concrete arch rising 484 feet above its bedrock foundation. Crest length is 960 feet. The spillway structure adjoins the dam on the left abutment.

TRI-DAM P



DONNELLS DAM rises 480 feet above foundation. This project included construction of a 7-mile long concrete-lined tunnel, penstock and powerhouse.

Approximately 230,000 cubic yards of concrete were used in Donnells Dam and related structures. With POZZOLITH Retarder, 364 lbs. of Type II cement per cubic yard and 6% entrained air, test cylinders averaged 4,000 psi at 28 days.

To hold the temperature of mass concrete at approximately 45° F at the time of placement, the temperature of concrete materials was carefully controlled. During hot weather this was accomplished by circulating cold air through the aggregate bins and obtaining batch water from a cold mountain stream. When the ambient temperature dropped below 35° F, the mixing water was heated and steam was used to warm the sand. In this manner the desired 45° placing temperature was maintained within close limitations.

The Tulloch Project—Tulloch Dam is a concrete gravity structure, 1600 feet in length, having a maximum height of 200 feet.

Though control of heat evolution was desired even during cold weather, it was felt that slow strength gain at early ages might result from the use of a retarder at low temperatures. Laboratory and field tests quickly indicated, however, that with POZZOLITH Retarder, retardation occurred only during the first few hours after placement

TULLOCH DAM stretches nearly 1/3 of a mile across the Stanislaus River. Here POZZOLITH Retarder proved particularly beneficial in mass concrete during summer months when the temperature soared up to 110°F.

TRI-DAM FACILITY is jointly owned and operated by the Oakdale and the South San Joaquin Irrigation Districts, California. Design Engineers: George T. Goodall Co. & International Engineering Co., Inc. • Project Engineers: Tudor-Goodenough Engineers • Contractors: Donnells Dam and Beardsley Dam—Tri-Dam Contractors (a joint venture by Morrison-Knudsen Co., Peter Kiewit Son's Co., Macco Corp., and Stolte, Inc.); Tulloch Dam—The Arundel Corp. and L. E. Dixon Co.

tial savings in cost of concrete—in fact, cost records show a total savings of $172,500 on the entire project.

Throughout the project, Master Builders field men assisted in solving on-the-job problems . . . adding their experience and product know-how to the technical talents and experience of Tri-Dam Project engineers, contractors and concrete suppliers. Result: uniform, better quality concrete at lowest cost in place.

To better meet concreting requirements on your current and future projects—call in the local Master Builders field man. At no cost, he'll demonstrate—with your materials—that POZZOLITH will produce improved concrete . . . superior in performance, in quality and in economy.

PROJECT

and one-day strengths equaled those obtained with a non-retarded mix at the same temperature.

Most of the 240,000 cubic yards of concrete employed at Tulloch was batched out of a job-site plant. Savings resulting from the use of POZZOLITH approximated $100,000 for an even greater per cubic yard figure than was realized on Beardsley.

Extreme temperature variations—variety of mixes—Concrete work at Tri-Dam extended through all seasons with temperatures ranging from 110° F during the summer to below freezing at night in winter months. A large variety of concrete mixes, mixing methods and placing procedures were employed. The design strengths ranged from 2,000 to 3,000 psi at 28 days. Maximum aggregate sizes ranged from ¾" to 6".

POZZOLITH and Master Builders field service—Employed in all but a small part of the 500,000 cubic yards of concrete in the Tri-Dam Project, POZZOLITH effectively aided the placing operation in all situations encoutnered. With POZZOLITH Retarder, rate of temperature rise was reduced and carefully controlled. Strength requirements were met with substan-

BEARDSLEY DAM—an earth fill dam with concrete spillway. Work here demonstrated the lower cost in place of POZZOLITH concrete.

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Pontoons for TVA's floating boom are cast in dewatered approach channel.

TVA Builds a Floating Guard

The Tennessee Valley Authority is constructing a 530-ft-long, floating guard wall, or boom, as a part of the new 100-ft-lift lock under construction at Wilson Dam on the Tennessee River.

Conventional design for a navigational lock would extend the river wall upstream to protect tows against wind and wave action when entering and leaving the lock chamber. But Wilson Lake is too deep for that. Its 100-ft depth prohibited the construction of either a solid concrete wall or a cap wall supported by piers. Instead, the floating boom was designed, using experience gained from construction of a similar structure at Kentucky Lock.

By George K. Leonard and Henry T. Lofft *who are eminently qualified to write about Tennessee Valley Authority construction. Mr. Leonard joined the agency shortly after it was created in 1933 and has been deeply involved in its works ever since. He retired in July of this year as chief engineer. Mr. Lofft came with the Authority in 1935, served as project manager on several major TVA jobs and became chief construction engineer in 1956.*

• **Boom is concrete**—The boom is a reinforced concrete structure 553 ft long, consisting of six pontoons rigidly bolted together. It is 27 ft wide and 13 ft 1 in. high to the main deck. A 10-ft-wide operating deck is 7 ft above the main deck. Each pontoon has a double row of watertight compartments.

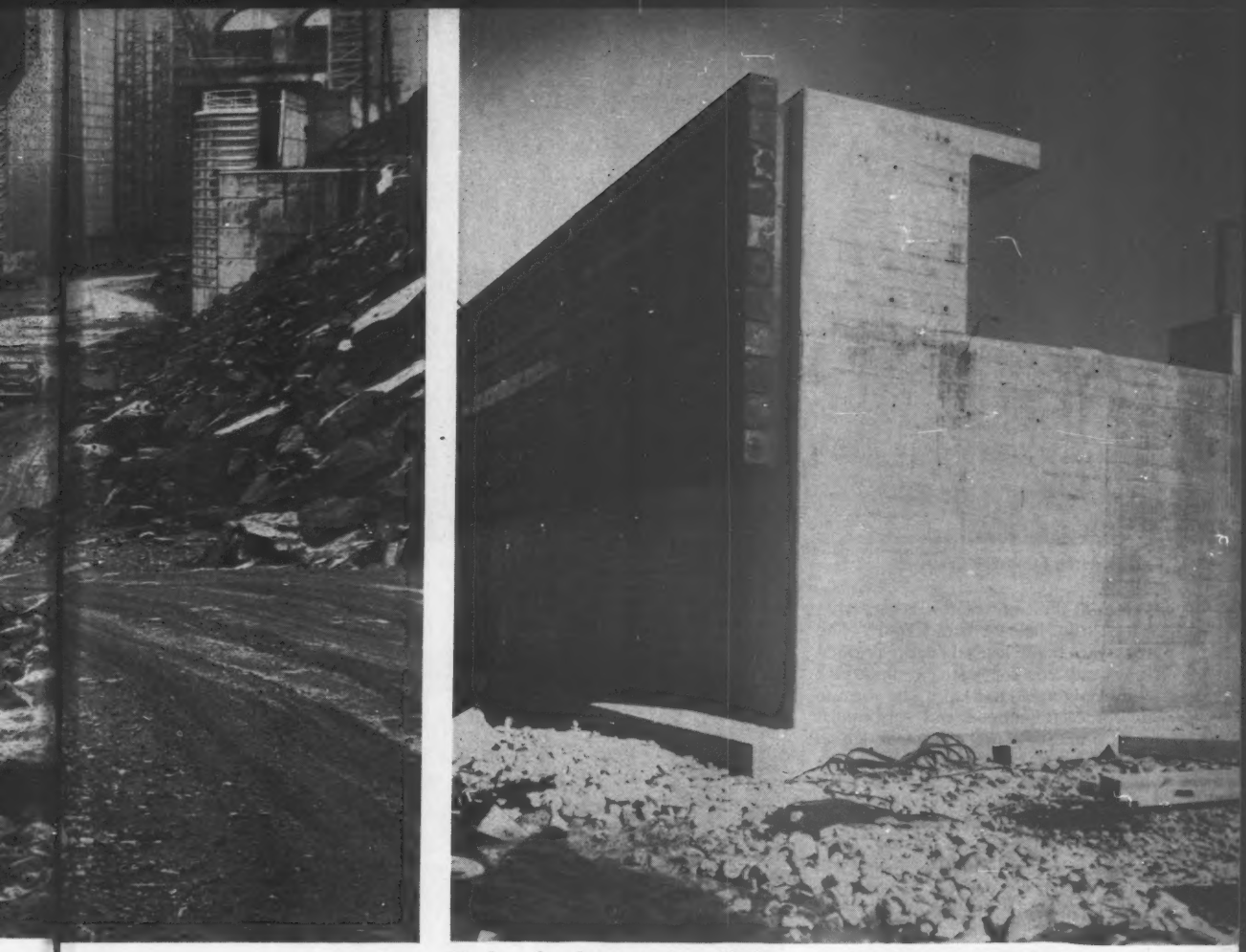
The downstream end of the boom is to be connected to a buoyant carriage traveling in a vertical slot in the upstream face of the river wall of the lock. The carriage is about 22 ft long. It will be able to rise and fall about 6 ft. A pivot will permit limited horizontal rotation of the boom.

The upstream end of the boom is to be anchored to two deadmen at the bottom of Wilson Lake. Anchor cables will be connected by chains to an adjustable, hand-wheel-operated mooring winch on the boom. In addition to the service cables, there will be a set of emergency cables from the boom to the anchor cells to hold the boom in approximately its correct position in the event of failure of the service mooring system.

The wire ropes are 6 x 41 galvanized, 2¾-in. diameter, with wire strand core. They have a breaking strength of at least 550,000 pounds. Voids in the ropes are completely filled with plastic adhesive sealing compound. After fabrication the ropes are sheathed in a neoprene jacket about $\frac{5}{16}$ in. thick.

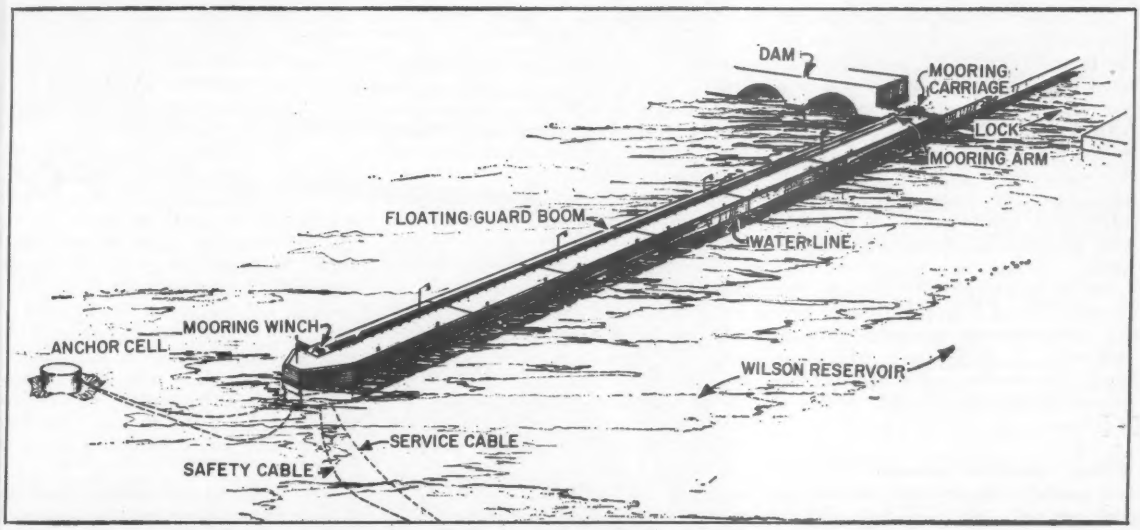
• **Cast in approach channel**—The pontoons were cast inside the cofferdam on the floor of the downstream approach channel. When the new lock is put into operation, the pontoons will be floated and towed through the lock to their upstream location.

(*Turn the page*)



Timber fenders are installed on pontoons in casting bed.

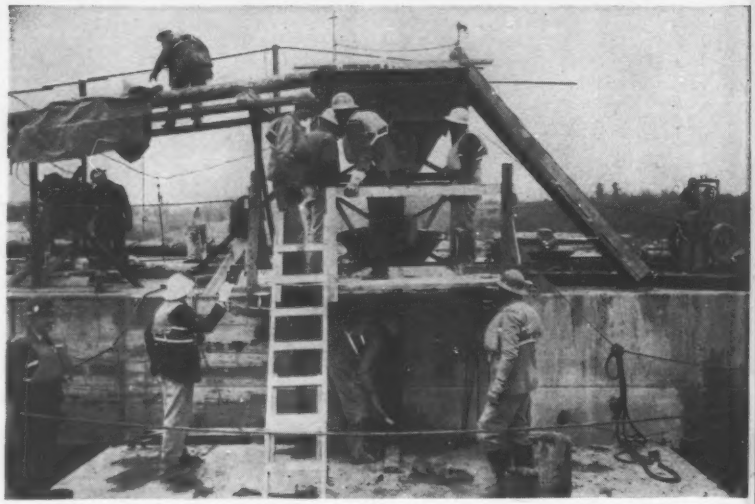
Wall for New Wilson Lock



Guard wall in place will comprise six pontoons bolted rigidly together.

DEADMAN FORM is lowered.

PUMPED-CONCRETE LINE runs out on barges and empties into . . .



. . . **HOPPER-FED TREMIE PIPE** extends down into the steel deadman form.

Rock at the casting site was excavated at least 6 in. below channel grade. The area was then leveled with crushed stone and covered with a 6-in.-thick reinforced concrete slab. The casting site for each pontoon was surrounded by an 8-in.-high curb to provide lateral support for the formwork and to provide a reservoir in which to cure the bottom slab.

The bottom slab was formed on two layers of 1x6-in. boards on top of the construction slab. The bottom layer of boards served as sleepers. They were placed transversely on 24-in. centers in the floor area and 8-in. centers under the walls. The top layer was tongue-and-groove boards nailed at right angles to the bottom layer. The space between the bottom boards will assure water reaching all parts of the bottom of the pontoon during floatation.

The outside wall forms were standard shop-fabricated panel forms. Forms for the interior vertical surfaces were four-sided boxes, open at the top and bottom to allow placing and finishing the bottom slab. No form ties were permitted through the exterior walls below the water line except at intersections with transverse walls. Two sets of forms were used for the six pontoons with thorough reconditioning between uses.

For connecting bolts through the concrete, thirty 5-in. pipe sleeves were spaced around the perimeter of each end wall. A groove for a rubber-hose grout stop was formed in one end face of each pontoon outside the pattern of bolt holes.

• **Three pours for pontoons**—Concrete was placed in three pours: the bottom slab and walls, the main deck, and the operating deck.

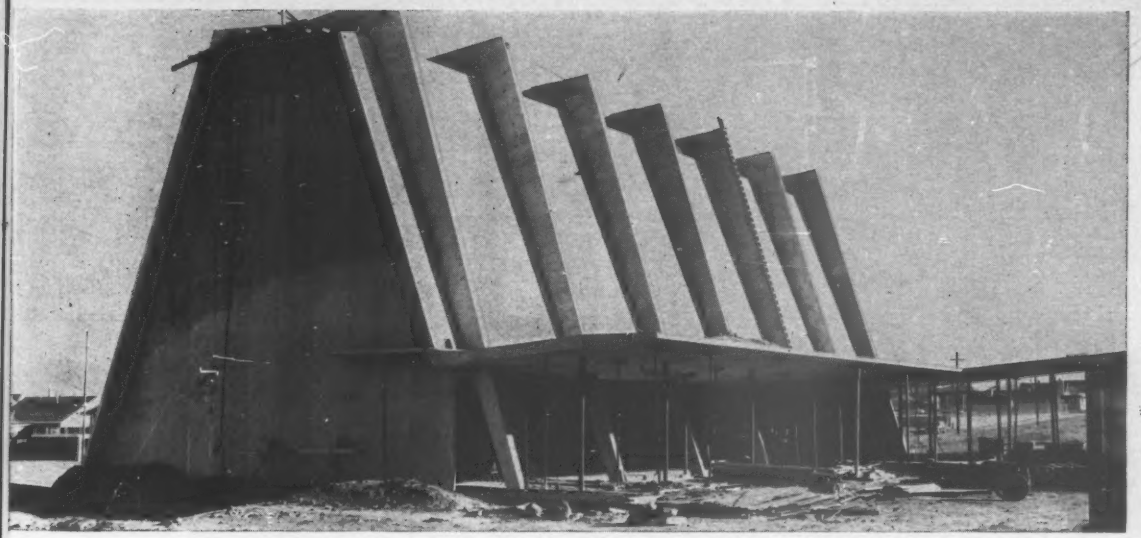
Great care was taken in forming and placing the first pour to make it watertight. It was over 12 ft high, so the construction joint between it and the second pour was safely above water level. The concrete mix was dense and workable. No cold joints were permitted. And honeycomb was prevented by careful vibrating and the use of ¾-in. oak puddling sticks of various lengths.

The first pour was placed as follows (see sketch): Concrete was first deposited for the floor slab, beginning at one end and continuing toward the other until the concrete at the starting point was sufficiently stiff to support concrete in the wall forms. Beginning again at the original starting point, a layer was then placed 2 to 3 ft high at the starting end and sloping to nothing in a distance of 20 to 25 ft. Next the floor slab was extended a convenient interval. Additional lifts were placed for the walls as the slab concrete stiffened.

The 6-in. and 8-in.-thick walls were concreted from the wall intersection points. Hoppers were used with special chutes shaped to fit between rods. This prevented concrete from coating the rods before embedment.

• **The mix**—Concrete was made of ¾-in. crushed limestone and manufactured sand. Materials per cu yd of concrete were 1.52 barrels of type II modified cement, 114 pounds of flyash (20% of cement by weight) and 20 ounces of air-entraining agent (for 5% air content). For the floor slabs, the water-cement ratio was 0.50 by weight, which gave the mix a slump of 2 to 4 in. The ratio for the walls was 0.60 with a slump of 7 to 9 in.

The pontoons were finished with the attachment of creosoted timber fenders and hand rail. They will remain in their casting position on the approach



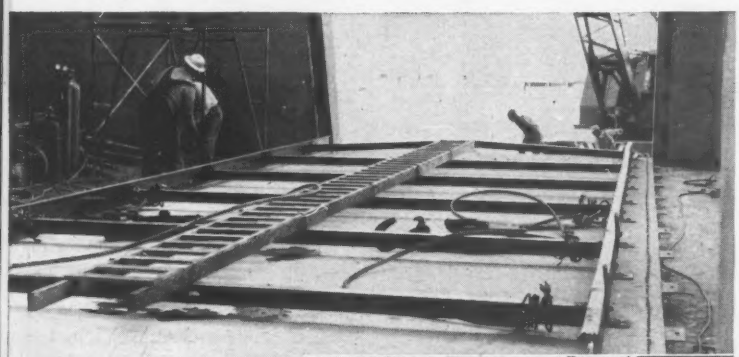
EXTERNAL ARCHES AND TILT-UP WALLS give simple dignity to Grace Lutheran Church, Denver, Colo. Baume & Polivnick, A.I.A., architect; Ketchum & Konkle, structural engineer; Marshall & Johnson, mechanical engineer. All are Denver firms. Contractor, Lippert Bros. Construction Co., Oklahoma City, Okla.

Inside-out construction pays tithe to new church

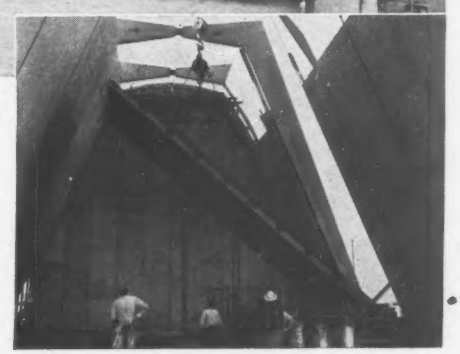
TO ACHIEVE the architect's dramatic design concept for this church, tilt-up wall panels were erected *inside* precast arches. This provided uninterrupted interior wall planes without distracting features, so that attention would be focused on the altar. It also reduced construction costs from 10% to 15%.

Wall panels were cast and cured on the floor slab (saving the cost of transportation to a storage area) and then raised directly into position. Their lower edges fit between the floor slab and the bases of the arches, which are tied together laterally by steel tension rods under the floor. Angle clips, spaced on 2′ centers along the sides, anchored the panels in the arches. This gave the smooth interior surface desired, and also eliminated several costly finishing steps.

Panels were 45′ high, 18′ wide, 6″ thick. Each weighed about 27 tons. They were poured with a lightweight concrete designed for 2500 psi. Specification material, and deliveries timed to pouring requirements, were obtained by using ready-mixed concrete, processed in truck mixers of certified design, capacity, mixing speed and water control accuracy.



STRUCTURAL STEEL STRONG-BACK is bolted to wall slab. Ladder gives access to anchor clips when fastening panel to arches.



ONLY INCHES TO SPARE as steel-reinforced wall panel is tilted up past overhanging opposite wall. End walls have been poured in place. Roof was poured later.

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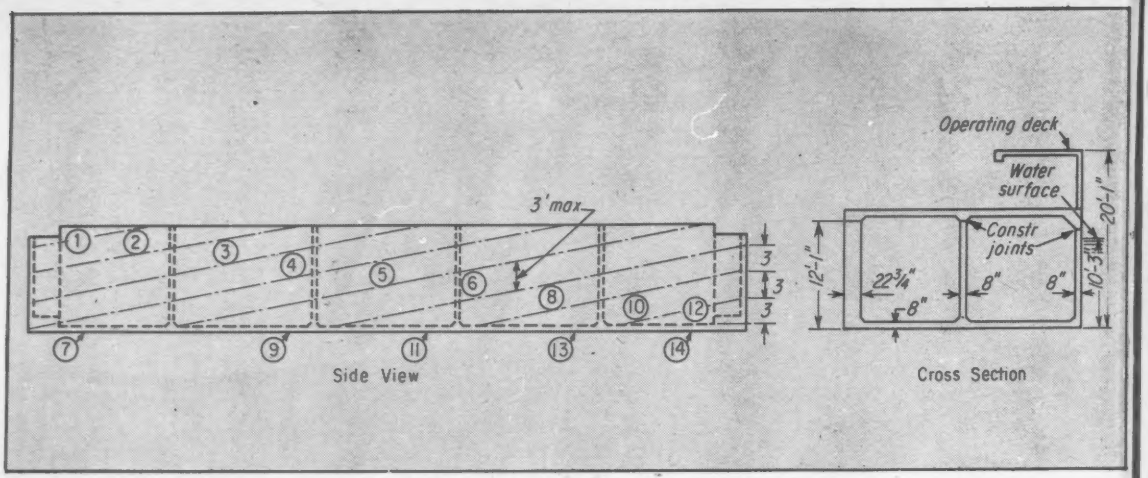

PONTOON CONSTRUCTION is cellular. Circled numbers indicate pouring sequence.

channel floor until the new lock is ready for operation. Then the casting site will be flooded. They will be trimmed temporarily with water ballast and later permanently trimmed with concrete. After placing the rubber hose grout stop, the pontoons will be bolted together and the joints inside the grout seal will be grouted. The completed boom will then be towed through the lock to its upstream position.

• **Anchorages a big job**—Each of the two deadmen anchors is a vertical, open-end steel cylinder, filled with concrete. They are set in 95 ft of water on the bottom of Wilson Lake. The cylinders are 27 ft in diameter and 20 ft high. They have an outer shell of ¼-in. plate supported by internal structural spiders. They were fabricated in the project shops. Each has an embedded wrought iron anchor to which the service and emergency mooring cables will be attached. They are located approximately 170 ft from the upper end of the boom.

Clamshell excavation of overburden material in 95 ft of water was slow, especially at the location of the north cell on the edge of an old railroad fill used prior to the filling of Wilson Lake.

Cells were located and oriented by triangulation from base lines on the dam and north bank. Points on the north bank were located so that by turning certain computed angles, the cells could be oriented properly for receiving the anchor cables. Buoys were attached to the two handling lugs on the cell that would be in line with the anchor cable. After the cell reached bottom, the buoys were checked for alignment. Then the cell was raised slightly to clear the bottom, oriented to correct position by tag lines fastened to the cell, and relowered to the final position. A diver checked the excavation before and after the cells were set. and checked the top of the cells for level.

• **Deadmen concreted underwater**—The cells were concreted through tremie pipes. Concrete was trucked from the central mixing plant to 65-cu-yd-per-hr concrete pump located on a fill near to the downstream side of Wilson Dam. The 8-in. concrete line was strung out on several 100-ft barges to reach the location of the cells about 600 ft upstream from the dam. The line discharged into a 2-cu-yd receiving hopper on the upstream barge, anchored over the steel cell form. The hopper gate permitted discharge into a large funnel, connected by one section of "elephant trunk" to the 10-in. tremie pipe. The tremie pipe was supported from the barge by chain falls with its discharge end centered in the steel form.

• **Tremie pipe primed three ways**—Water was removed from the tremie pipe at the start of the underwater concreting by a priming operation. Concrete was placed in the pipe until filled, then the pipe was raised a few inches until flow started.

In planning the setup some thought was given to installing a valve at the lower end of the tremie pipe to prevent an outrush of concrete. This idea was abandoned, however, and experience proved that even with this great depth of concrete in the pipe, a foot or so embedment in the mud bottom was enough to seal the pipe for priming. While the cell was filling with concrete, the end of the pipe was kept 2½ to 3 ft below the top of the concrete.

The initial priming effort was made with a "rabbit," a plywood and canvas disc in the top of the pipe. It was pushed down by concrete placed above it. Binding kept this from being too successful. Next a straw and burlap ball was tried, with better results. This method should be satisfactory where the bottom is rock or concrete. The final priming method was to rest the pipe in the bottom and fill it with concrete. Then by raising the pipe a few inches, flow could be started.

• **Mix had to flow**—The concrete mix was carefully designed to prevent plugging in the pipe leading from the pump. At the same time it had to be as dry as possible for tremie use. Aggregate of ¾-in. maximum size was used. For each cu yd of concrete, 1.52 barrels of type II cement was used with 20% (by weight) fly ash added. With a water-cement ratio of 0.57 by weight, a slump of 5 to 6 in. was obtained. Drier mixes would not flow readily through the delivery pipe. Between 45 and 52 cu yd were placed per hr.

Although it was planned to concrete each cell in a continuous operation, trouble at the mixing plant stopped work on the first cell after 90% of the concrete was placed. The rest was placed next day. The second cell was concreted continuously in nine hours.

The unprecedented scheme for maintaining navigation during construction by juggling traffic between a detour canal and various sections of the deepened permanent channel has not deviated from the original plan and has been completely satisfactory (ENR Apr. 10, 1958, p. 40). The new lock will be ready for operation next November.

The new Wilson lock is being built by the TVA Office of Engineering. In addition to the authors, principal engineers concerned with the project are R. A. Monroe, chief design engineer; R. A. Elliot, chief water control planning engineer; and in the field, Warren McMahan, project manager; H. L. Broadfoot, construction engineer; and J. C. McCraw, construction superintendent.

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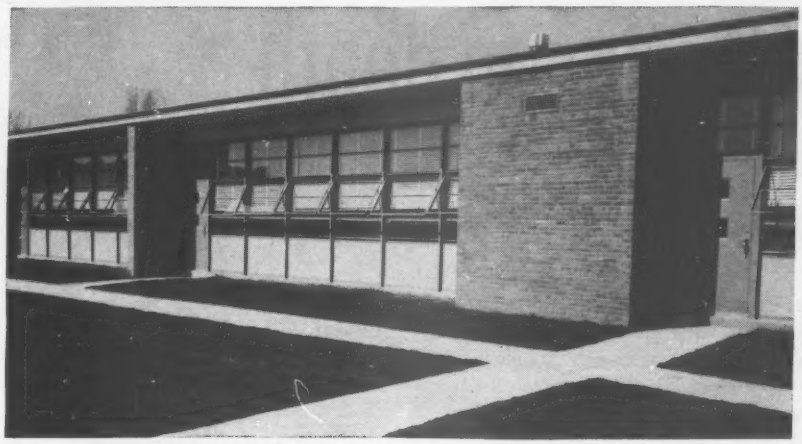

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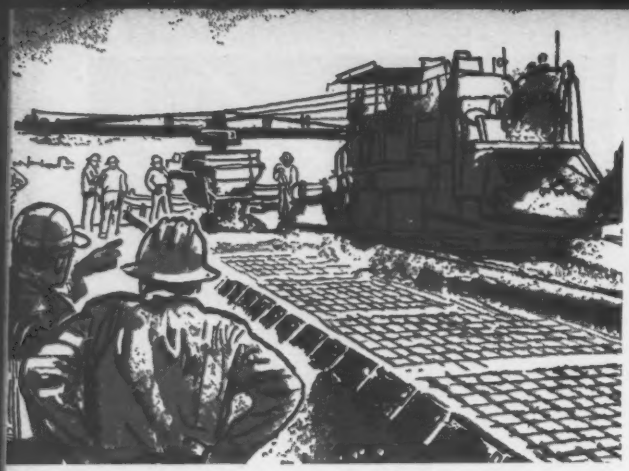

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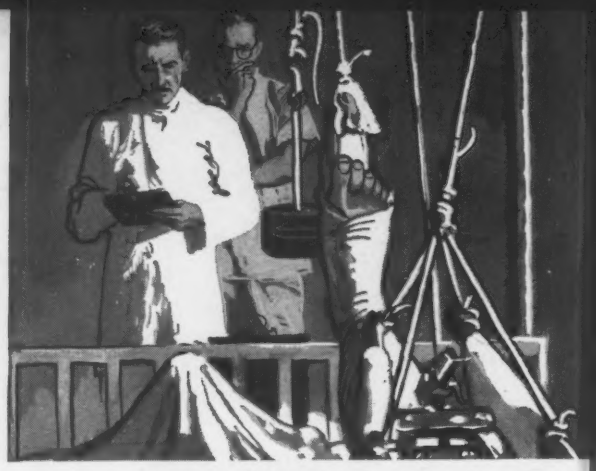

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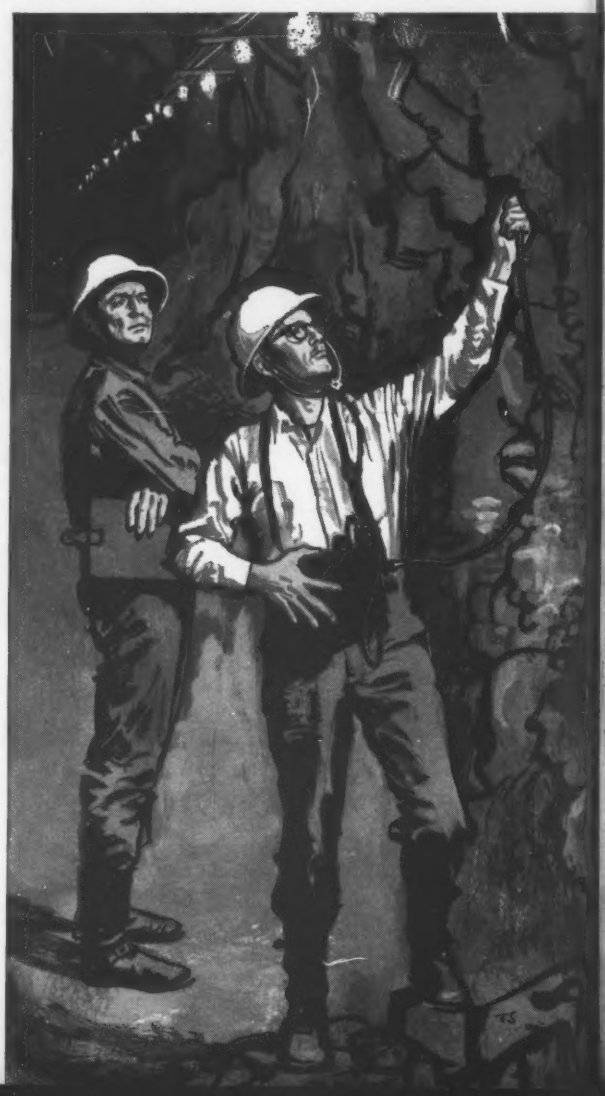

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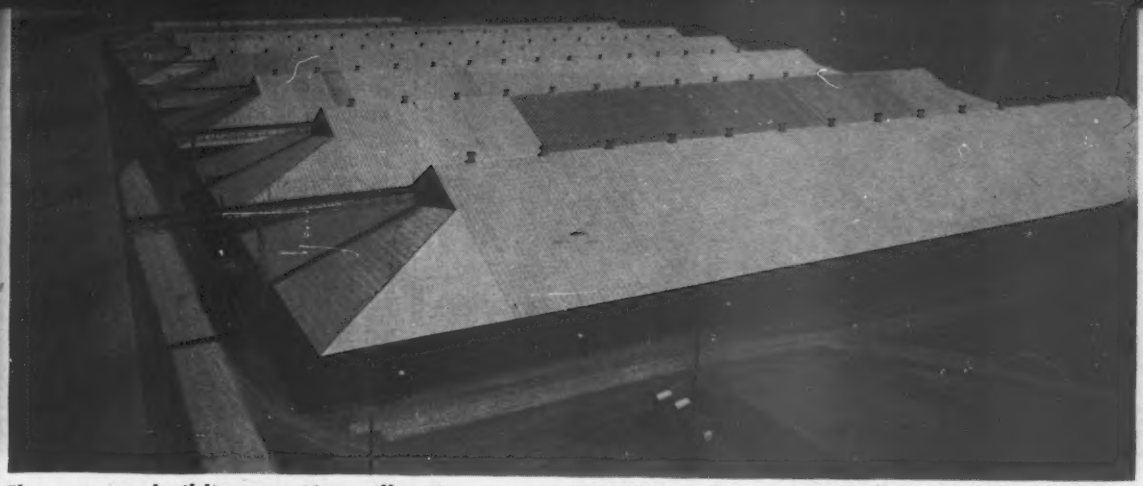
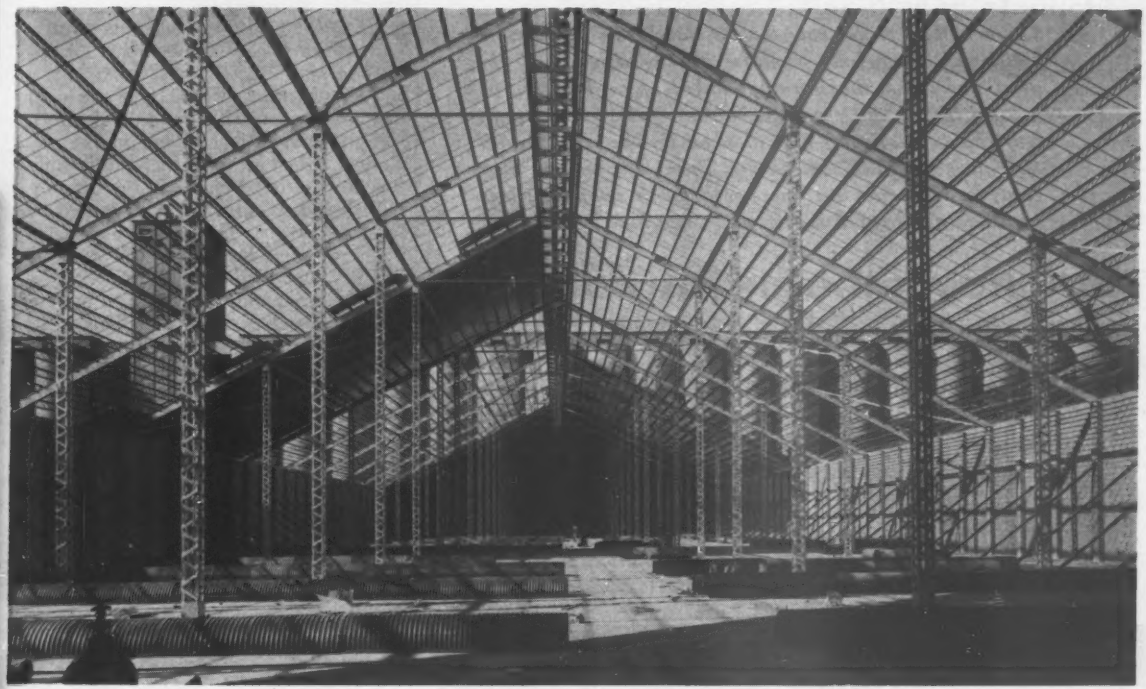


Flat storage buildings at Haysville, Kan., cover 700,000 sq ft, store 20 million bushels of wheat.



Latticed steel columns support the steel roof framing of the 140-ft buildings.

Wheat Storage Built at Low Cost

The biggest flat storage buildings for wheat in the U. S. have recently been in Haysville, Kan. The $5-million project has eight buildings, each 140 ft wide. They vary in length from 510 ft to 740 ft, with an aggregate total length of 5,040 ft. The project will store about 20 million bushels of grains.

The 1959 estimated wheat production for the U. S. is 1,200 million bushels. Since only 500 million bushels will be used, the remaining 700 million bushels must be stored. The demand for storage buildings extends beyond Kansas and has existed over the past ten years.

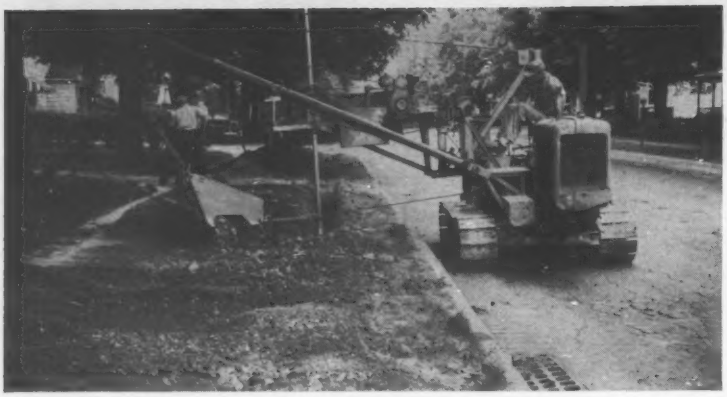
Today, grain-storage firms are building many structures of the flat storage type with steel framing. The reasons: fast construction and low cost (only $5.55 per sq ft for material and erection of steel frame and roof).

The buildings in Haysville are novel because of a hopper-type roof used at the ends. This design gives less thrust on the ends of the structure than that of the conventional grain storage buildings, where the end wall is vertical from floor to ridge.

Since piled grain peaks at or near the ridge, a flat end wall must support a greater thrust than the side walls. This thrust is the criterion of the design. In Haysville the buildings, however, all walls are loaded identically with a maximum design pressure of 600 psf.

The buildings are enclosed with 10-ft-wide by 20-ft-high precast concrete wall panels. They have an eave-to-ridge

By H. H. Hill, *district engineer, American Institute of Steel Construction, Oklahoma City, Okla.*



Job photos don't lie . . .

See from these photos how the Cleveland 80W's ability to pull backfill into trench permitted spoil to be placed off the street, away from the curb—no blocked-up catch basins, no need to lift backfill over curb, no interference with traffic (good public relations!). Note also how the one-man-operated 80W first backfilled and tamped driveways, making them ready for immediate use (more good public relations!) then backfilled and tamped the rest of the trench.

but they tell only part of the CLEVELAND 80W story

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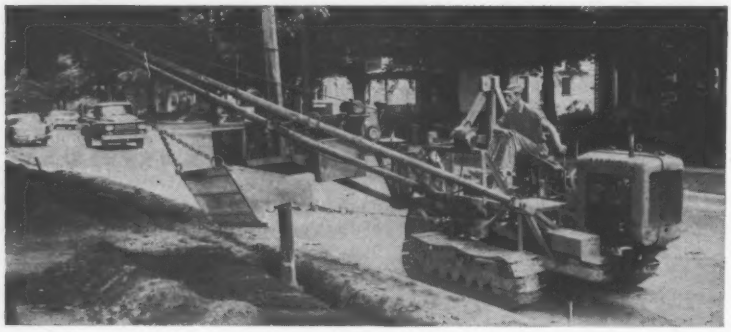

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height of 35 ft. Inside are four rows of steel columns, which support the roof beams. They are spaced 30 ft c-c longitudinally and 24 and 45 ft transversely. These columns are built up of 2½x2½x¼-in. angles and ¼x2-in. lattice bars, to reduce the slenderness ratio.

The pilasters of the sidewalls are spaced 10 ft c-c. Slanted pipe tie-downs are used to assist them in carrying the thrust of the wheat. These walls also are designed to carry total wind load.

Roof framing consists of sloping 14 WF 30 beams resting on the exterior walls and the columns. These rafters support open-web steel joists 2 ft 9 in. c-c. The framing is connected with machine bolts. It carries a roof of corrugated sheet metal.

The concrete floor slab rests directly on a heavy plastic membrane placed over a sand fill.

All structures of this type are used in conjunction with adjacent elevators. Fresh grain is first placed in the elevators, where it is turned until sufficiently dry to be placed in the flat storage buildings, to which it is carried by screw conveyor. This overhead convevor runs the full length of each building and is supported from the ridge.

The grain must be aerated to prevent molding and combustion. This is accomplished with individual automatic aerator motor and fan units controlled by temperature and humidity. A 7½ hp, 22-in.-dia blower is used.

Each blower is located at openings in the sidewalls and feeds air into half-circular, finely perforated corrugated sheets that are bolted to the floor. These ducts extend transversely across the building at 30-ft intervals.

Return of the grain to the elevators is accomplished with a belt conveyor placed below the floor in the center of the building. This conveyor is fed by hoppers in the floor slab.

When the hoppers are opened, the grain from the center portion of the structure is removed. This procedure, however, does not remove grain on either side of the conveyor; it is necessary to use a bulldozer to push the remaining grain to the hoppers. The 45-ft center span of the building affords working space for this operation. (The air ducts are removed at this stage to facilitate the unloading.)

The roof framing was designed by C. S. Kayser, Wichita, Kan., for Chalmers & Borton, contractors and engineers, Hutchinson, Kan. The latter designed the walls, floor-handling and aeration equipment and was the general contractor for construction.

Structural steel was fabricated by Geo. C. Christopher & Son, Inc., and Western Iron & Foundry Co., Inc., both of Wichita, Kan.

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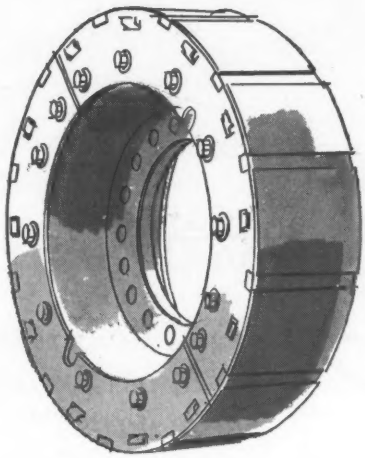

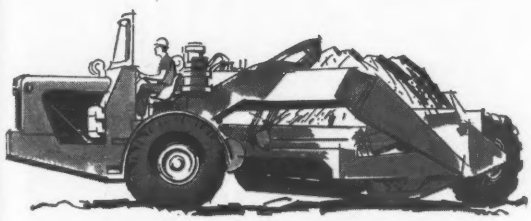

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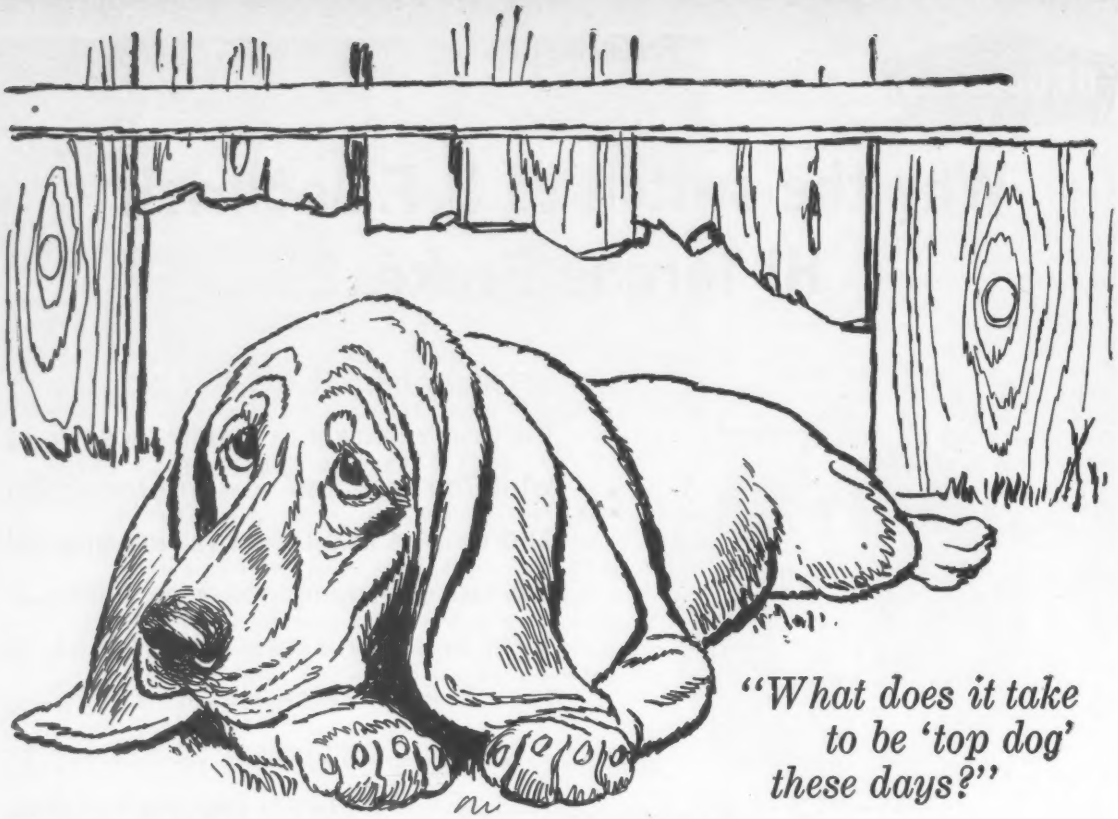
B.F.Goodrich ***Hi-Torque brakes***



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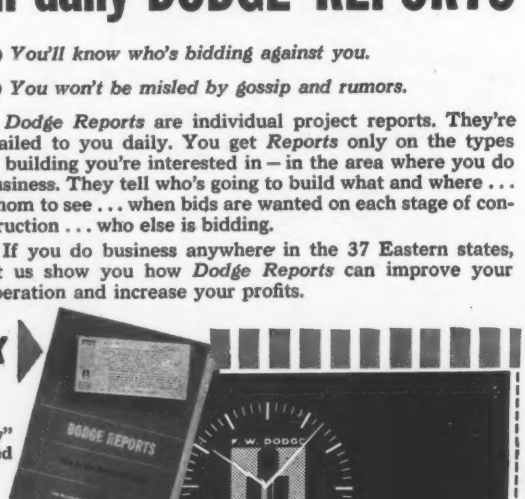


Mexico Uses 150 Culverts in a Fill

A series of 150 small-diameter, nestable metal culverts has been used in Mexico to cross a broad plain subject to seasonal high water.

The crossing, about 1,350 ft long, is part of the new highway between Coatzacoalcos, Veracruz, and Villahermos, Tabasco.

The site is near a mountain range. During heavy rains all the run-off in the immediate vicinity is directed to the highway fill. The culverts not only channel the flow of water, but support a fill on which the roadbed is built.

The culverts are 36 in. in dia and made of 12-gau galvanized steel. They are double asphalt-dipped because of the extreme tropical conditions in the area. Flexible metal pipe was necessary because of unstable subsoil.

Each culvert pipe is 60-ft long. They were installed across the plain at right angles to the roadbed at 9-ft centers. Concrete breakwaters were built downstream to prevent excessive undercut. During recent wet periods the flow of water filled the pipes to three-quarters of their capacity.

Height of the cover over the pipes is 5½ ft. The 1.5 : 1 slope is protected by a 7 : 1 mixture of soil and cement.

Installed cost of the pipe was about $100,000. The 9,000 linear ft of pipe were fabricated and coated in the Armco Mexicana plant in Mexico City.

A similar installation near Deming, N. M., used 183 concrete-pipe culverts, each 65 ft long, to provide drainage during flash floods.

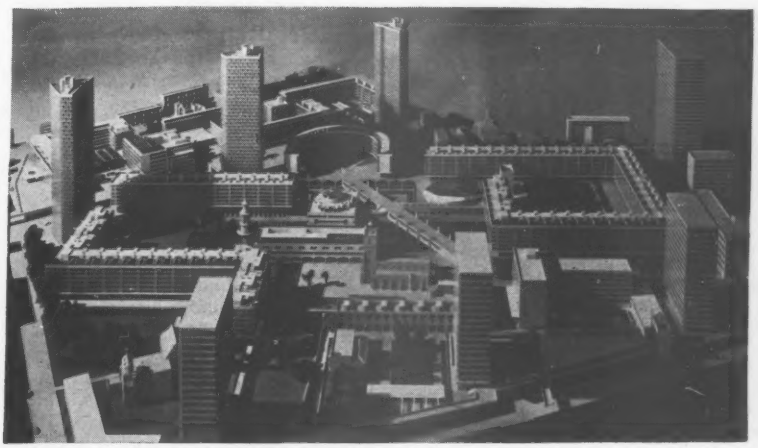
London Gets Major Housing Project

A $56-million housing project has been announced for the City of London.

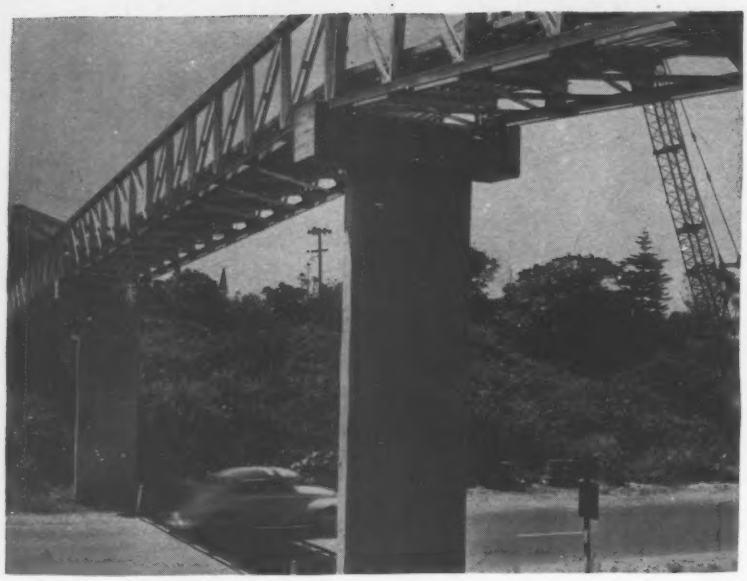
Proposed location of the development is a 35-acre site called The Barbican, part of the city's financial district and location of some of London's most severe bomb-damage in World War II.

Main part of the project will be 2,150 housing units in six-story apartment blocks and in three triangular-shaped, high-rise buildings. Four rectangular buildings will provide new homes for the City of London Girls School and the Guildhall School of Music and Drama, plus a hotel, fire station and a coroner's court. Two added features of the plan are a sports center and an arts center with theatre, concert hall, art gallery, library and restaurant.

St. Giles Church, badly bombed during the war, has been restored and will be the parish center of the Barbican housing development.



Architects Chamberlin, Powell & Bon are now seeking approval of the plan. They estimate the entire development will take seven years to complete after the plan is approved and once construction gets under way.



Aluminum Bridge Is Portable

South Africa's first all-aluminum footbridge has been put up with the idea of taking it down later. The bridge crosses a road at Doonside in Natal.

The 156x6½-ft bridge was fabricated in three 52-ft spans. Each unit took 45 minutes to hoist into position. Aluminum rivets and bolts were used to join sections. Stainless steel foundation bolts fix the ends of the spans to concrete supports.

One reason for this type of bridge is that it probably will be taken down and reassembled elsewhere when the volume of traffic justifies a permanent bridge over the road. A number of other bridges are being erected with the same plan in mind.

The members for the five-ton bridge were formed by the Aluminum Company of South Africa's factory in Pietermaritzburg, Natal.

Around the World . . .

• **Egypt lacks engineers**—Egypt will have a shortage of engineers of all types for at least five years. Only 598 graduates were available this year to fill 1,651 vacancies. The country needs 462 civil engineers this year, but graduated only 210 from its colleges.

• **Loan for A-plant**—The World Bank is backing nuclear power development for the first time with a $40-million loan to Italy. The money will be used by Cassa per il Mezzogiorno, a government agency that is concerned with the development of southern Italy, to build a nuclear plant there.

• **Alberta highways lag**—A high number of lost shifts due to rain is causing a serious lag in Alberta's highway program, says Highway Minister Gordon E. Taylor.

• **Soviet-UAR pacts**—The United Arab Republic and the Soviet Union have signed four contracts covering irrigation and water projects in Syria. The first three agreements cover studies of the irrigation and hydroelectric potential of the Euphrates, Khabour and Barada rivers. The fourth is for drilling 80 artesian wells in the Syrian desert.

• **For Alaskan tourists**—A California realtor has announced plans for construction of a $6-million tourist resort project to be built three miles outside Juneau, Alaska. Del Becker, the builder, said the project would include a 300-room hotel, an auditorium, night club, shopping plaza, yacht club and sport facilities. Options have been acquired on 46.7 acres of land for the project. Construction is expected to begin in 1961.

Bridge to Sicily

Suspension bridge planned to link Italy with Sicily

Initial exploration has been made in the Strait of Messina for a 12,685-ft bridge that would link Sicily with the Italian mainland and carry the Highway of the Sun to the southernmost point of Italy.

The bridge, as currently proposed, will be a double-deck suspension span. The bottom deck will have two sets of railway tracks and two lanes for military vehicles. The upper deck will have six traffic lanes. The project is expected to cost some $200 million.

But so far the special commission of the Italian Superior Council of Public Works has rejected all designs submitted on the grounds of technical deficiencies.

A hydrographic ship of the Italian Navy found three plateaus that run in a straight line between Sicily and the mainland at the narrowest part of the strait.

The two end plateaus are equidistant, about 3,774 ft, from the middle plateau. The center plateau is only about 300 ft west of midpoint between the two shores. The three plateaus are less than 300 ft below the surface of the strait. Some parts of the waterway are 4,000 ft deep.

Builders of the bridge will have to deal with heavy currents in the strait. The main current flows from the Ionian Sea through the strait into the Tyrrhenian Sea. The subsidiary current is the reverse. The flow alternates about every six hours.

The Messina Strait Bridge Corp. of America is promoting the financing of the project in the U. S.

Yugoslavia Power Project Will Get U. S. Loan Aid

A $15-million loan from the U. S. Development Loan Fund has been approved to help Yugoslavia construct the $54-million first stage of a hydroelectric project on the Trebisnjica River near Dubrovnik.

The project ultimately will consist of a 344-ft-high concrete arch dam with a 900,000-acre-ft reservoir and a power plant with three 53,333-kw generators. A 67-ft-high afterbay dam will be located about eight miles downstream of the main dam with an underground power plant equipped with four 104,000-kw generators.

In the first stage of development the powerhouses will be provided with only two generating units each.

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auction sales on credit!

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LIBERAL ON-THE-SPOT FINANCING . . . FOR BETTER CONSTRUCTION EQUIPMENT AUCTIONS!

Now — construction equipment sellers and buyers alike have an unprecedented opportunity to make satisfactory deals — with credit from Thorp. Using Thorp's complete sale handling service, sellers can move equipment faster and without financial red tape. Buyers can bid to secure the equipment they want with Thorp's immediate and extensive credit.

Credit available to buyers means on-the-spot nonrecourse time-payment financing. It *eliminates* the need for complete payment on date of sale, certified or cashier's checks, bankers' letters, etc. About three minutes will complete most time purchases. Thorp takes over collections and settlements, without recourse to seller. *The seller has his money — the buyer his equipment before Thorp clerks leave the auction.*

Thorp's Profit Purchase Plan is a flexible time-payment plan geared to the income production of the equipment. The buyer repays Thorp out of profits the equipment earns for him.

Thorp's single fee package includes complete handling of the sale: clerking by bonded personnel; extensive advertising; efficient management and administration; payment of auctioneer selected by the owner; complete, itemized final accounting of sale — plus many other benefits of specialized sale and financing know-how. Experienced auctioneers are available.

Advertising helps seller and buyer. Thorp lists and advertises all sales in newspapers, trade magazines, handbills or posters, and in descriptive brochures sent to Thorp's extensive buyer mailing list. This complete program assures a big attendance of interested prospects at Thorp auction sales.

Skilled clerks handle every Thorp sale. For over 30 years, Thorp auction sales have proven their value to sellers who want to move equipment rapidly and profitably — and to buyers who want good equipment immediately and on liberal credit terms. Whether you sell or buy or both, be sure to fill in and mail the coupon below.

Bank references: First Wisconsin National Bank, Milwaukee • Chase Manhattan Bank in New York • First National Bank of Chicago • Detroit Bank and Trust Co. • People's First National Bank and Trust Co., Pittsburgh • National Bank of Tulsa • First National Bank of St. Louis • others on request

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☐ send me more information on how to hold a Thorp sale.

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NEW!

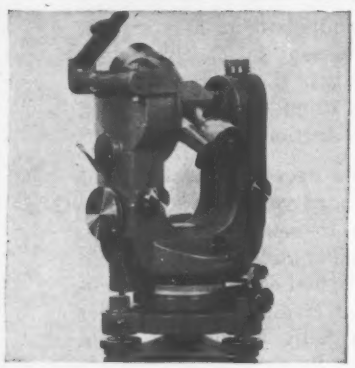
Decking that Makes a Difference

Louisville's new "Sure Foot" safety knurled hat section, aluminum decking is the last word in safety. No other is so solid, so steady under foot.

Handsome red rung handles add safety. So do the patented "Boss" rung-to-rail connections, which give added strength.

Write for illustrated details.

LOUISVILLE
LADDER COMPANY
1101 West Oak Louisville, Kentucky



British Theodolite available in America

An Optical Micrometer Theodolite, from Cooke, Troughton & Simms Ltd., Britain's oldest maker of surveying instruments, has been introduced in the United States.

The 9-lb. Model V308 can be read directly to 20 sec. of arc and by estimation to 5 sec. The instrument features brilliance of field of its circle-reading microscope, high magnification of the graduation system and easy reading. The telescope is of the internal-focusing type with a spiral focusing eyepiece.

The V308, complete with spirit levels, optical plummet, centering device and either telescopic or non-telescopic tripod, is packed in a lightweight case.

V308 is a companion to the famed Tavistock Theodolite. Write for information on both.

PRECISION INSTRUMENTS INC.
1900 FIFTH AVE., TROY, NEW YORK

New Products

Plant Mixes Base for Paving

The Model 567 portable highway-airport base stabilizer plant handles cement, calcium chloride or bitumens as stabilizing agents. Ease of erection and dismantling, mechanical simplicity, high and constant production, precision proportioning and control of cement and water going into the mix are claimed for the equipment.

Pugmill mixer is a twin-shaft continuous type, designed for producing 600 tons per hour of stabilized base. Segmented mixer liners may be quickly removed for replacement.

A push-pull gate controls mixing pressure by maintaining a constant and desired depth of material in the pugmill. Cold feed can be brought into the mixer from either side of the plant or at the end.

The mixed material hopper is located in the center of a two-direction drive-through area.

The plant is constructed so that a contractor may buy it with all required components or just those items he may want. Breakdown is leg frame unit, mixed material bin unit, continuous mixer unit and engine frame unit. MADSEN WORKS DIV., BALDWIN-LIMA-HAMILTON CORP., P. O. BOX 38, LA MIRADA, CALIF.

New Products Briefs . . .

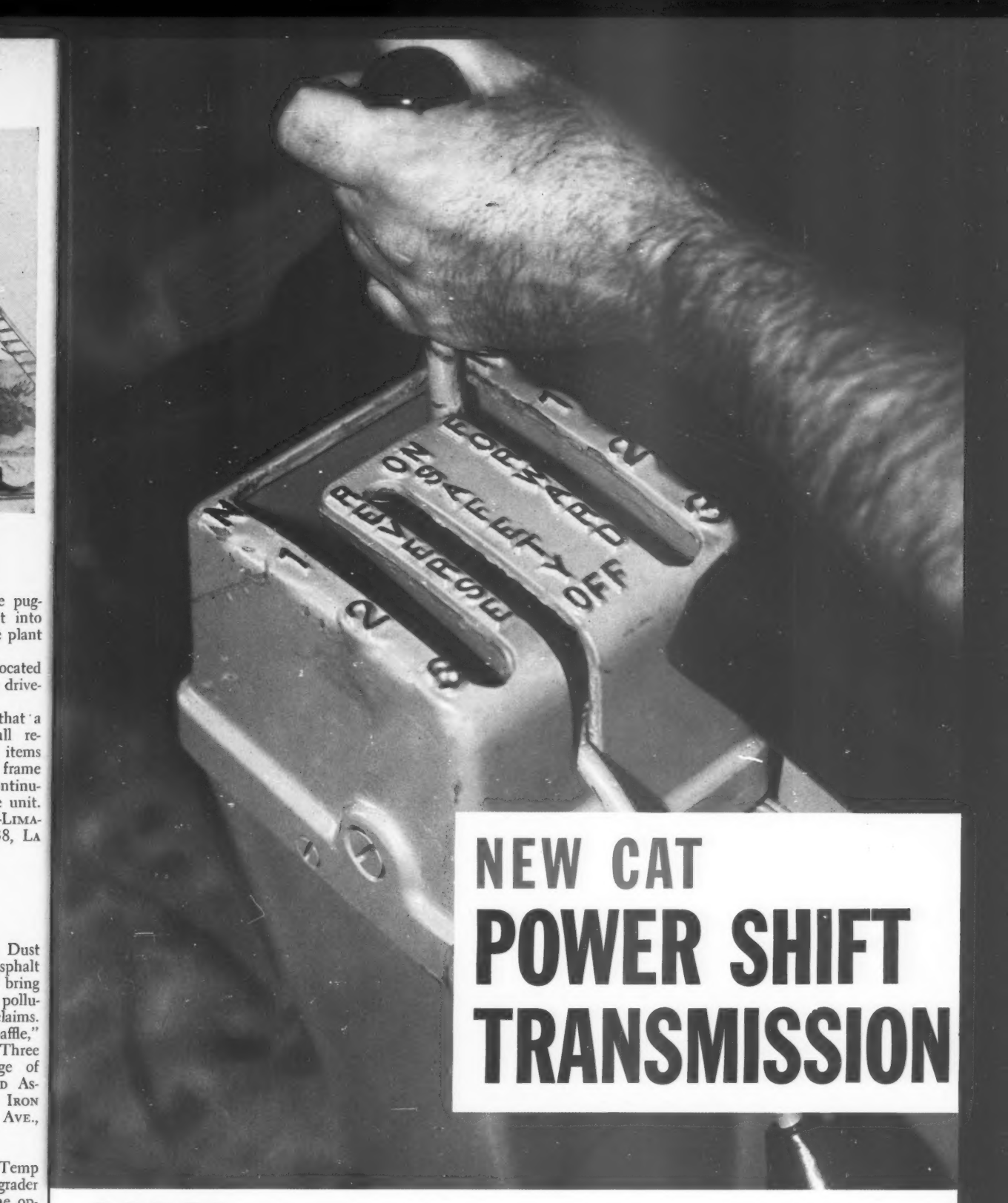
• **Fork trucks**—A line of electrically powered fork trucks that includes capacities of 4,000 lb, 5,000 lb and 6,000 lb is equipped with carbon pile speed control systems that are said to offer smoother travel and reduced maintenance. Top travel speeds are 8 mph. Lifting speed exceeds 40 fpm. ELWELL-PARKER ELECTRIC CO., 4205 ST. CLAIR AVE., CLEVELAND, OHIO.

• **Portable lubrication**—Speedy "on-the-job" lubrication of equipment is the aim of portable lubrication rigs. They can be mounted on small pickups, flat-beds or van-type trucks. Rig is equipped with air compressor, drum pumps, spring-loaded hose reels. CYPHER CO., 1201 WASHINGTON BLVD., PITTSBURGH 6, PA.

• **Washed exhaust**—The Bollard Dust Washer can be added to any asphalt plant or dry primary collector to bring exhausts within the strictest air pollution limits, the manufacturer claims. The exhaust is subjected to a "baffle," "spirilize" and "scrub" action. Three models available to cover range of 16,000 to 65,000 cfm. BOLLARD ASPHALT PLANT DIV., COLONIAL IRON WORKS CO., 17649 ST. CLAIR AVE., CLEVELAND 10, OHIO.

• **Comfortable cabs**—The Dust-Temp can be fitted to tractor and motor grader cabs to supply dust-free air for the operator. It also is an air cooler; heater attachment is optional. CRENLO, INC., ROCHESTER, MINN.

(*New Products continued p. 61*)



CATERPILLAR'S **No. 1** PROJECT

PAYS OFF FOR YOU AGAIN! A multimillion-dollar research program—to meet the continuing challenge of the greatest construction era in history with the most productive earthmoving machines ever developed.

NEW POWER SHIFT TRANSMISSION for CAT D9 and D8 TRACTORS

Shifts on-the-go under full load in a split-second! ■ Changes speed, reverses direction with finger-tip control lever—and no clutching!

The wraps are off—it's ready. After many years of research and on-the-job testing, Caterpillar now offers a revolutionary new transmission option for Cat D9 and D8 Tractors—power shift. The most recent Caterpillar new product development, this new transmission—with an exclusive design—provides production highs never before possible with a track-type tractor. Here's why:

1. It combines for the *first* time the flexibility and anti-stall features of torque converter with the operating snap of direct drive! And because of its direct drive characteristics, it is more efficient than other power shift designs.

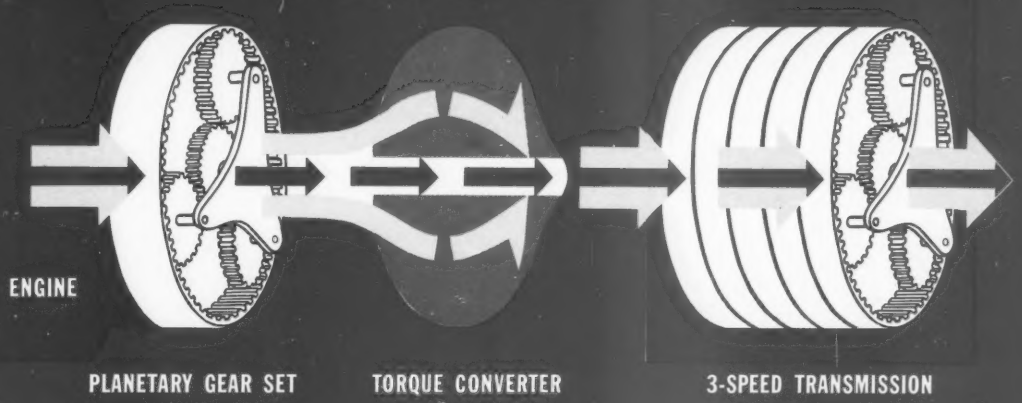
2. With one control lever and no clutching, it reverses direction . . . changes speed . . . smoothly . . . under full load . . . in a fraction of a second!

Talk about productivity—Cat power shift delivers in a big way. Split-second, on-the-go shifts give plenty of power in the highest gear possible. Shifting is so easy the operator just naturally gets more work out of the tractor. What's more, he gets it on the toughest, most demanding track-type jobs. Cat power shift design is strong and rugged for the *heaviest earthmoving duty*.

Get the details about this power shift from your Caterpillar Dealer. Ask for a demonstration—see for yourself how it steps up production. Remember, you also have your choice of direct drive or torque converter in the D9 or D8. Whatever the application, Caterpillar has the most productive machine for it!

HIGHER PRODUCTION PUSHLOADING: *Power is quickly, easily adjusted to meet the demand. Shifting to higher gear boosts scraper out of cut at higher speed, increases production. Speedy reverse quickly positions machine for next push.*

CAT POWER SHIFT TRANSMISSION



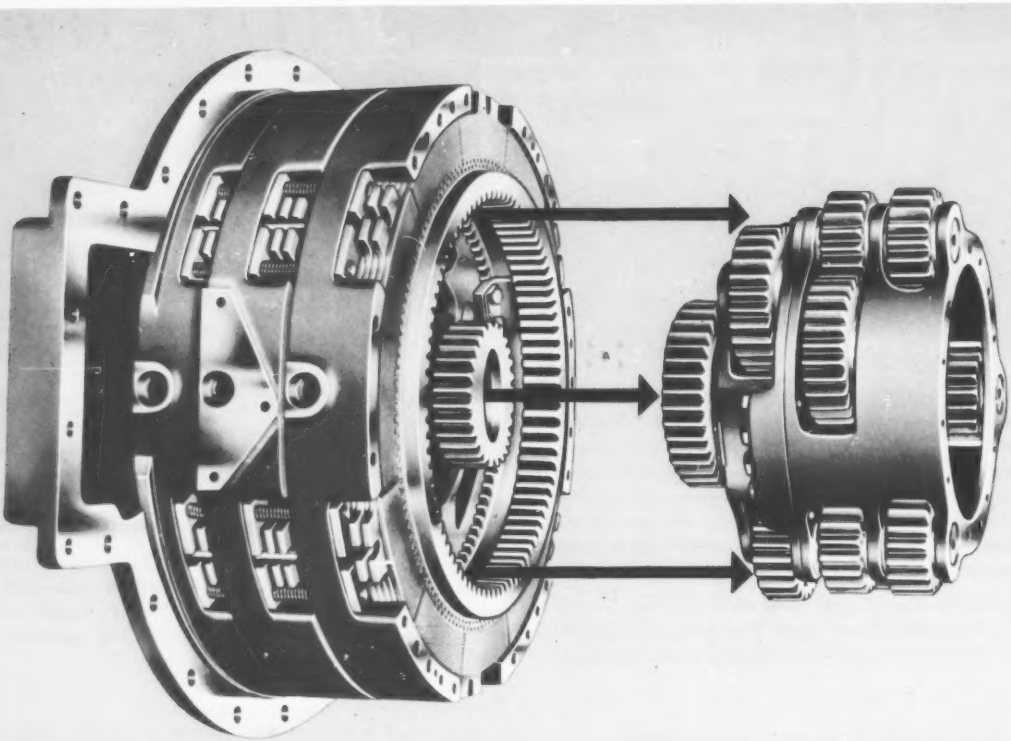
BASIC DESIGN: Total power is transmitted from the engine to a planetary gear arrangement mounted in the engine flywheel. The planetary divides and directs the total power — part goes through a direct drive shaft straight to the transmission and the remainder through a torque converter to the transmission. This enables the Cat power shift to combine some of the efficiency and the positive operating feel of direct drive with the anti-stall and flexibility features of torque converter drive.

Power shift control is mounted to the left of the operator (see previous pages). One selector lever (black knob) eliminates gearshift, forward-reverse and flywheel clutch levers. The safety lever (red knob) prevents accidental transmission engagement. The selector lever moves in a "U" path to various positions. To the left are three reverse speeds. To the right, three forward speeds. To change speed, simply move lever to the required position. To change travel direction, move lever to the opposite side. Changing speed and direction are as easy as that—without clutching—and changes can be made while the machine is in motion under full load without loss of power.

Pioneered by Caterpillar, this uniquely designed power shift is engineered and built for heavy earthmoving service—it's rugged! The transmission itself weighs over one ton! And its clean, unit construction design makes it easy to service, when required.

HIGHER PRODUCTION BULLDOZING: *As the material builds up, Cat power shift permits split-second, on-the-go shifting. There's no forward surge when the load is dropped. Instant reversing further slashes cycle time on a bulldozing assignment.*

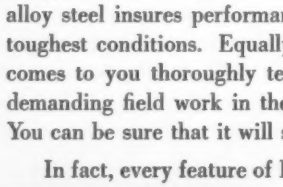
ONE TON OF RUGGEDNESS



—CAT POWER SHIFT TRANSMISSION!

You're looking at a portion of the components that make up the new Cat power shift transmission. This rugged transmission, weighing over a ton, is designed and built specifically by Caterpillar for its giant tractors. Every component is constructed for long-lived service. Selected alloy steel insures performance that stands up under the toughest conditions. Equally important, Cat power shift comes to you thoroughly tested by exacting design and demanding field work in the heaviest earthmoving duty. You can be sure that it will stay on the job.

In fact, every feature of D9 and D8 Tractors is specifically designed and built to keep these machines working *profitably* for you. For example, lifetime lubricated track rollers never require further lubrication until rebuilding. They feature Caterpillar-developed, *exclusive* floating-ring seals that assure constant, positive sealing. These seals—plus a rugged design featuring bushing-type bearings and deep hardenable alloy rims—plus 2½ million test hours—make Caterpillar rollers ready for the toughest jobs.



Lifetime lubricated rollers and idlers—one of many other rugged features of Cat D9 and D8 Tractors.

In short, nothing has been overlooked to make these modern, heavy-duty machines the most practical and most productive in their class in the field.

For complete facts on the new Cat power shift see your Caterpillar Dealer. He's ready to explain in detail how the Cat power shift works, or to demonstrate its ruggedness . . . its ease of operation . . . its productivity. Name the date—he'll demonstrate!

Caterpillar Tractor Co., Peoria, Ill.; San Francisco, Calif., U. S. A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

DIESEL ENGINES • TRACTORS • MOTOR GRADERS
EARTHMOVING EQUIPMENT

BORN OF RESEARCH
PROVED IN THE FIELD

Crawler-Mounted Crane Has 190,000-lb Capacity

A lift capacity of 90.5 tons from a 60-ft boom at a 12-ft radius is attributed to a crawler-mounted crane now on the market.

The model has axles that provide a crawler width of 13 ft 4 in. center to center of the crawler girders. With 42-in. shoes, the outside width from crawler to crawler is 16 ft 10 in. The crawlers are 19 ft 3 in. long.

Maximum boom lengths for the machine are 170 ft of boom or 160 ft of main boom with an added 30 ft of jib. Power action brakes on the main drums are applied by hand lever control. Traction brakes are spring loaded and released by air. KOEHRING DIV., 3026 W. CONCORDIA AVE., MILWAUKEE, WIS.

Diaghragm Pumps Have Gas or Electric Motor

Two models have been added to the line of Marlow aluminum diaphragm pumps. They are model 302B-EL, an electric motor unit, and model 302B-1, a gasoline engine unit.

Both have 3-in. male-threaded suction and discharge. They use standard diaphragms and have replaceable rubber flapper valves. Either model is available as a base or wheel-mounted unit.

The electric motor unit has capacities up to 71 gpm at 56 strokes per minute. The gas unit has a capacity of 76 gpm at 60 strokes per minute.

Both models have oil-lubricated gear drive. MARLOW PUMP DIVISION, BELL & GOSSETT CO., MIDLAND PARK, N. J.

Portable Heater Designed For Safety, High Output

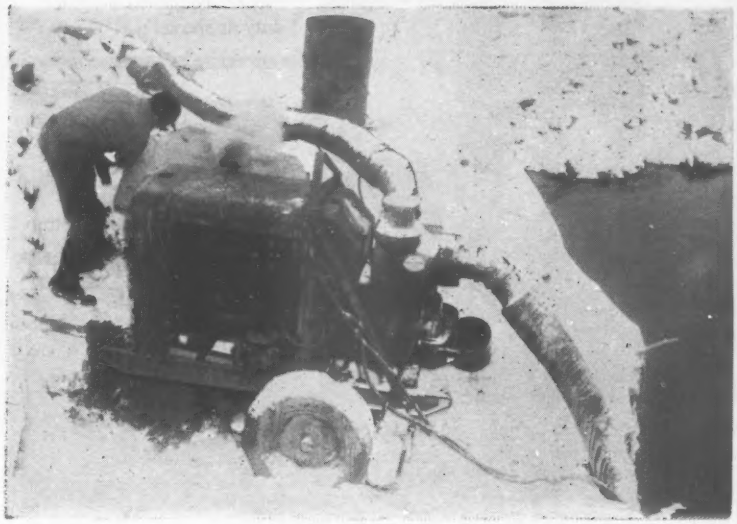
An oil furnace mounted on wheels for easy portability has been designed for safe operation without an attendant, the maker states.

The Stow ID heaters blow air around the outside of a completely enclosed combustion chamber, producing large volumes of heated fresh air. Any fumes are vented out the top of the heater, meeting safety requirements for temporary heating in enclosed areas.

Model S420ID produces 420,000 BTU while blowing air at the rate of 4,500 cu ft per minute. The heater contains a thermostat control for automatic cut-off at a preselected temperature, and a low-oil cut off switch. Ignition is completely automatic, eliminating need for matches or torches. STOW MFG. CO., 19 SHEAR ST., BINGHAMTON, N. Y.

(New Products continued p. 62)

DOUBLE-DUTY · TRIPLE-TOUGH



Quaker Thermoid

WATER-SUCTION HOSE

Whether you feed it light-duty or heavy-duty work, Thermoid-Quaker water-suction hose gives you long, champion-like service. It's sturdy enough to withstand full vacuum and direct connection to centrifugal and piston pumps. Yet it's light and flexible . . . well-muscled but manageable.

The toughness comes in three layers. First, a black, natural-rubber tube that resists mild acids and alkaline water . . . abrasive sand and grit. Second, a strong, durable carcass of heavy cotton cord interwoven with heavy-gauge, copper-coated spiral steel wire. Third, a black natural-rubber cover that stands up under the hardest knocks . . . combats abrasion, sunlight, and rough weather.

Ask your Thermoid distributor about Thermoid-Quaker water-suction hose (1½" to 4" ID, 50-foot maximum lengths). Or write to *Thermoid Division, H. K. Porter Company, Inc., Tacony & Comly Streets, Philadelphia 24, Pa.*

THERMOID PORTER DIVISION

H.K. PORTER COMPANY, INC.

PORTER SERVES INDUSTRY: with Rubber and Friction Products—THERMOID DIVISION; Electrical Equipment—DELTA-STAR ELECTRIC DIVISION, NATIONAL ELECTRIC DIVISION; Specialty Alloys—RIVERSIDE-ALLOY METAL DIVISION; Refractories—REFRACTORIES DIVISION; Electric Furnace Steel—CONNORS STEEL DIVISION, VULCAN-KIDD STEEL DIVISION; Fabricated Products—DISSTON DIVISION, FORGE AND FITTINGS DIVISION, LESCHEN WIRE ROPE DIVISION, MOULDINGS DIVISION, H. K. PORTER COMPANY de MEXICO, S. A.; and in Canada, Refractories, "Dissston" Tools, "Federal" Wires and Cables, "Nepcoduct" Systems—H. K. PORTER COMPANY (CANADA) LTD.

Steel strapping's ideal for jobs like holding these temporary supports in place.

Model 3A heavy-duty stretchers illustrated. Other models available for lighter duty or special use.

Model C heavy-duty sealers illustrated make it easy to apply seals to heavy-duty strap.

Model CU-25 cutters easily sever any strap, including 2" x .050". Other models available for lighter duty.

Use Signode steel strapping to speed and simplify tying, holding, handling

The tools are simple, rugged, dependable. The methods, as one user wrote, "are just common sense." Savings in concrete column form tying regularly run to about one-third over other conventional methods. But when you have Signode tools and steel strapping on the job, you can save on all these other jobs, and more:

- *Tying foundation wall forms*
- *Tying grade beam forms*
- *Tying forms for fireproofing steel beams*
- *Reinforcing of scaffolding*
- *Holding support timbers in place*
- *Bundling materials for loading, moving, handling...lumber, brick, reinforcing rod, wall panels, holding down machinery, etc.*

The Signode man near you can help you get the tools and strapping you need from the complete Signode line...can help you with methods if you wish. Call him today, or write:

STRENGTH TABLE—SIGNODE STRAP REPRESENTATIVE STRAP SIZES

Strap Size	Approx. Strength in Pounds	Approx. Cost per Foot*
5/8" x .020"	1,250	0.7¢
3/4" x .023"	1,725	1.0¢
3/4" x .035" HD	3,100	1.5¢
1 1/4" x .035" HD	5,000	2.4¢
1 1/4" x .050" HD	7,000	3.1¢
2" x .050" HD	11,000	5.0¢

*Zone 1, 1-Ton Prices

SIGNODE STEEL STRAPPING CO.

2682 N. Western Avenue, Chicago 47, Illinois
Offices Coast to Coast.
Foreign Subsidiaries and Distributors World-Wide
In Canada: Canadian Steel Strapping Co., Ltd., Montreal • Toronto

Small Turbocharger Offers High Power Boost

International calls its 7¾-in.-dia, 24-lb turbocharger the smallest in production.

The engine booster is said to raise power output by 23% over that of a naturally aspirated engine.

Unit consists of a single-state centrifugal compressor mounted on a common shaft with a single-stage-radial inflow turbine.

The turbocharger was developed with the AiResearch Industrial Division of the Garrett Corp., Los Angeles. INTERNATIONAL HARVESTER CO., 180 N. MICHIGAN AVENUE, CHICAGO 1, ILL.

Rubber-Mounted Crane Has 45-Ton Capacity

A rubber-mounted mobile crane with a 45-ton capacity at 15-ft radius is equipped with a pin-connected boom and self-removable outriggers and counterweights for rapid job-to-job moves.

Its basic boom is of welded alloy steel, 40 ft long. An adjustable cantilever jib in lengths up to 50 ft is available. MANITOWOC ENGINEERING CORP., MANITOWOC, WIS.

30-Ton Crane Dimensions Suited to Highway Travel

A 30-ton truck-crane is said to be the only crane of this capacity with an 8-ft over-all width that makes it possible to travel on highways without a special permit. The unit weighs just over 60,000 lb.

A choice of two different carriers offers road speeds up to 45 mph. Among optional equipment are jibs up to 40 ft long, a safety boom limiting device, and 10- or 12-part boomhoist lines. LINK-BELT SPEEDER CORP., 1201 6TH ST., S.W., CEDAR RAPIDS, IOWA.

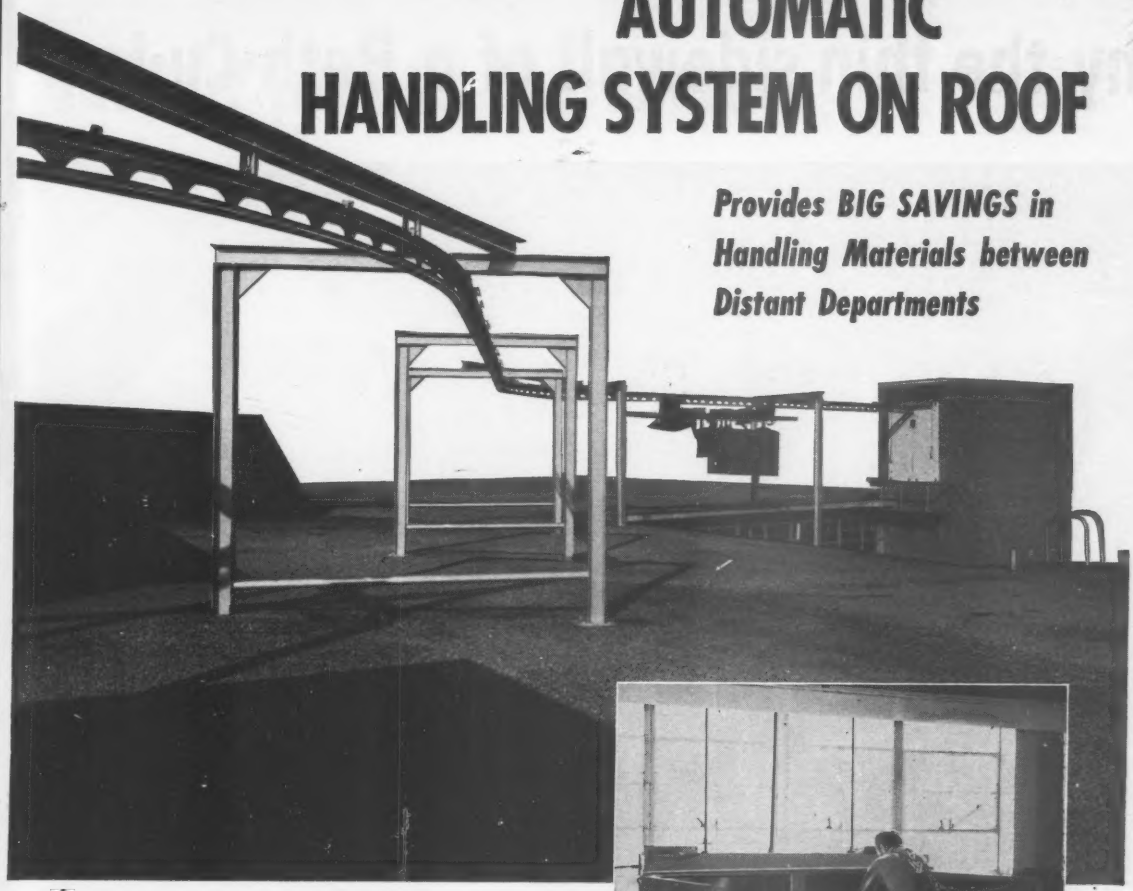
Hydraulic 10-Ton Crane Has Telescopic Boom

A self-propelled hydraulic crane that lifts in the 10-ton range has a telescoping hydraulically operated boom that extends to 25 ft and retracts to 15, swings through continuous circles in either direction without limit, stops and tilts upward to 60 deg.

The crane, known as the Model 410, is equipped with gasoline or diesel engine and has a road speed up to 23 mph. Optional manual extensions give it a maximum horizontal reach of 47 ft. It has hydraulically operated outriggers and torque converter drive. AUSTIN-WESTERN WORKS, AURORA, ILL.

AUTOMATIC HANDLING SYSTEM ON ROOF

Provides BIG SAVINGS in Handling Materials between Distant Departments



The Tramrail carrier seen here is approaching one of the penthouses built at each end of the track. The penthouse doors open and close automatically as the carrier passes through. The load lowers to the floor inside.

Loading Tramrail freight van inside building. At a touch of a button, it hauls heavy loads long distances, day or night, through heat or cold, rain or shine, dependably, at low cost.

NEARLY every plant has thousands of square feet of idle roof area, yet their working areas may be starved for floor space.

Using the roof for materials handling by means of an automatic Cleveland Tramrail system can be a big help in relieving a crowded plant. And the roof need not be flat. Even a saw-tooth or gabled roof can be used to support a Tramrail track.

The automatic system illustrated here brought about tremendous savings. It, in effect, joined two factory departments and enabled as efficient an operation as though they were physically adjacent. It reduced the handling cost to the barest minimum because the Tramrail carrier shuttles back and forth without need of attendants. It eliminated other overhead expenses.

Cleveland Tramrail engineers have had wide experience in the design and application of automatic materials handling systems and will be happy to discuss ways of helping you without obligation.

Write for free "Automatic Handling" Booklet.

CLEVELAND TRAMRAIL

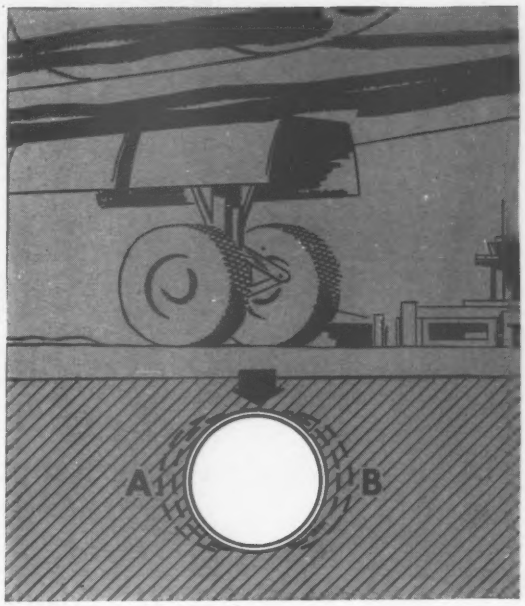
Overhead Materials Handling Equipment

CLEVELAND TRAMRAIL DIVISION • THE CLEVELAND CRANE & ENGINEERING CO. • 3151 E. 290 ST. • WICKLIFFE, OHIO

Why the thin sidewall of a Beth-Cu-Loy

A 28-ft., 16-gage Beth-Cu-Loy sheet steel culvert demonstrates its ability to flex longitudinally. This illustrates how Beth-Cu-Loy drainage structures can easily be made to conform to curves and changes in grade.

culvert pipe is the secret of its strength



Exaggerated for clarity, this drawing shows action of Beth-Cu-Loy pipe under load. Pressure against fill, at points A and B, sets up counter-loads which largely offset the forces through the vertical axis.

Looking head-on at a drainage structure made from galvanized corrugated Beth-Cu-Loy steel sheets, you might wonder how those thin sidewalls can support the load. Yet that very thinness gives Beth-Cu-Loy pipe one of its strongest advantages: flexibility.

Pipe made from Beth-Cu-Loy is flexible both transversely and longitudinally. Because of the latter, easy curves in the line can be made without special fittings or connections. But its transverse flexibility is even more of an advantage.

Makes Use of Surrounding Material

Because of this flexibility, a culvert or drainage pipe made from Beth-Cu-Loy sheets can make use of the surrounding material to support imposed loads. In the drawing above, for example, the load produces controlled deflection in the pipe. As points A and B move into and compact the trench walls, a load begins to develop around these points, spreading the pressures peripherally. Thus flexibility accounts in large part for the ability of corrugated steel pipe to carry the load.

Not so with rigid pipe of the type used for drainage. It cannot flex with the load, thus cannot transfer a significant portion of the forces to the surrounding material. The bulk of the pressure is exerted through the vertical axis of the pipe.

Bethlehem furnishes galvanized corrugated Beth-Cu-Loy (copper-bearing steel) sheets to fabricators who make culvert pipe and other drainage structures. Beth-Cu-Loy meets the specs of the AASHO. For full details, just get in touch with the nearest Bethlehem sales office, or write to the address shown here.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

5 reasons why Atlas Copco's "TIGER" is best for stoping and all short-hole drilling!

(1) It's fast and easy to handle!

(2) It's easy collaring, with little recoil!

(3) Features a retractable air leg!

(4) Convenient controls, automatic back head!

(5) Operates on single air supply!

Here's the TIGER—a new, fast, compact rock drill with power and stamina to meet toughest drilling requirements! Its high percussion rate not only speeds penetration, but at the same time cuts recoil to a minimum. With controls conveniently located, collaring is unusually easy.

What's more, the automatic back head prevents dry collaring. Flushing water actually flows before drilling starts. And, the Tiger's "constant blowing" provision sends air through the machine the instant pressure is turned on, keeping water and cuttings from the rotation chuck.

There's still another "plus"—the Tiger's exclusive integral type pusher leg, with retractable piston rod. Operates on a single air supply!

This isn't the whole story by any means. For more facts about the amazing new Tiger rock drill and how it can speed *your* drilling, call your nearest Atlas Copco representative. Or, write to us at Dept. ENR-10.

Atlas Copco

610 Industrial Avenue
Paramus, New Jersey
COlfax 1-6800

930 Brittan Avenue
San Carlos, California
LYtell 1-0375

John Laboon's Big Project Is Done

This week in Pittsburgh, a big, jovial man with a smile to match accepts the accolades of those who credit him with pushing a difficult $80-million construction project to completion.

John Francis Laboon, director and chief engineer of the Allegheny County Sanitary Authority, sits, satisfied, through dedication ceremonies at Pittsburgh's radically new and gayly colored sewage treatment plant, the nation's outstanding new pollution control project and a project he, more than anyone, brought into being.

(The treatment plant, with its Laboon process for concentration of sludge, will be described in detail in ENR's Nov. 19, 1959 issue, which will be devoted largely to a special report on Pittsburgh's exemplary renaissance.)

There were times, no doubt, when John Laboon wondered whether this dedication day would ever come, whether Allegheny County's miles of interceptors and sorely needed treatment plant would ever be finished to abate pollution near the head of the Ohio, where the Allegheny and Monongahela rivers join.

His trials and tribulations in constructing this plant and putting it into operation might have been too much for an ordinary man. But John Laboon's determination and drive are not ordinary. Nor is his ability to secure loyal support—of both subordinates and superiors—to be underestimated.

He's quick to credit those who helped him through the 13 years it has taken to finance, design and construct this project. From the start he surrounded himself with outstanding people:

"We started out with excellent people including Ellis E. Bankson, now deceased; Stanley Dore, now chief engineer of New York City's Board of Water Supply; Robert M. Morris, now vice president of Swindell-Dressler; Miss Gladys Swope as chief chemist, now with the Argonne Project of AEC.

"Lawrence E. Gentleman continues as my deputy chief engineer. With a small but capable staff we completed investigations, established and operated a pilot plant and finally prepared plans and specifications for the interceptors.

"After contracts were awarded, we undertook detailed supervision and built up a competent field staff under Richard Dougherty, who was in charge of all construction," he says.

Mr. Laboon lights his third cigar of the morning and goes on to credit Metcalf & Eddy of Boston, the firm that designed his pilot plant findings into a $17-million disposal plant. "My only regret," he says, "is that Frank Flood didn't live to see it finished." Mr. Flood was the partner in Metcalf & Eddy, with whom John Laboon worked out his plant's novel design.

His sewage works is dedicated in Pittsburgh this week.

As he generously hands out the credit for completion of his difficult and costly project, John Laboon reserves a special measure for David Lawrence (now Pennsylvania's governor), who, as mayor of Pittsburgh, fought and worked with and for him in the early days of seeking financial support.

"Getting signatures of the public officials representing 70 municipalities to a long-term contract with the Sanitary Authority was much harder than actually getting the project built," he recalls. "I wouldn't want to go through it again. Without Mayor Lawrence's help this project would have been a dead duck," he says.

The Laboon-Lawrence association goes back a good many years. It was David Lawrence, then secretary of the commonwealth, who in 1935 helped move John Laboon "temporarily" from a partnership in the Pittsburgh consulting firm, Chester Engineers, to his first public assignment, district director of the depression-spawned Works Progress Administration in Allegheny County.

He's been a public servant ever since.

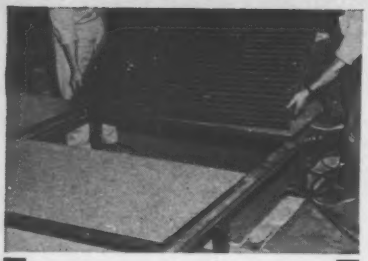
He resigned his Chester Engineers position in 1936 to become director of the Allegheny County Department of Public Works, a post in which he handled a $25-million annual construction program until 1943. Driving around the county today, he proudly points out this bridge and that highway he built before the war.

In January, 1943, John Laboon, then 53, went into the Army as a lieutenant colonel. Before separation in 1945 he had become a full colonel and had distinguished himself as military governor of Leghorn Province in Italy, a job he recalls for its frustrations, yet with obvious pleasure and pride.

In 1946, he was named chairman of the Allegheny County Sanitary Authority. In 1955 he assumed his present title of director and chief engineer.

With his big project now done, John Laboon looks to retirement next July. He'll be a lean and energetic 70 years of age. Chances are the authority will find good use for part of his time after retiring him.

(Turn the page)



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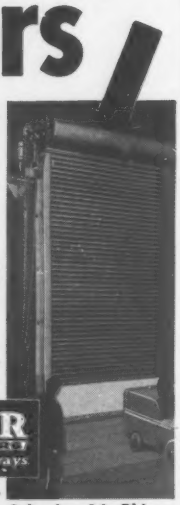

KINNEAR ROLLING DOORS
Saving Ways in Doorways

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"We didn't think so many things could go wrong."

"We could always see the funny and humorous side."

But all he'll say for sure is that he wants to "keep working and die with my shoes on rather than rust away."

There's no more sign of rust on this strapping, athletic septuagenarian than there is on his spanking new sewage works, which he shows off with all the bounding enthusiasm of a big kid with a new hot rod.

He's a happy man with a good sense of humor. Recalling the project's strikes, the tunnel explosion, the equipment breakdowns, the bugs in the process ("we didn't think so many things could go wrong"), John Laboon says, "We could always see the funny and humorous side besides the dirty and serious side of it." As evidence, he pushes across his highly polished conference table a sheet of words for a composition to be sung to the tune of the Whiffenpoof Song: "We're poor sewer rats, who have lost our way . . ." and John Laboon gets a big laugh as he recalls singing it in the past with his loyal, respectful staff.

Serious again he reminisces that his move from consulting practice to the public service area was "a regretful thing, money-wise. There's just no money in it for an honest man," he says. But he recalls how he disliked being away from home so much while a consultant, away from his growing family of nine children.

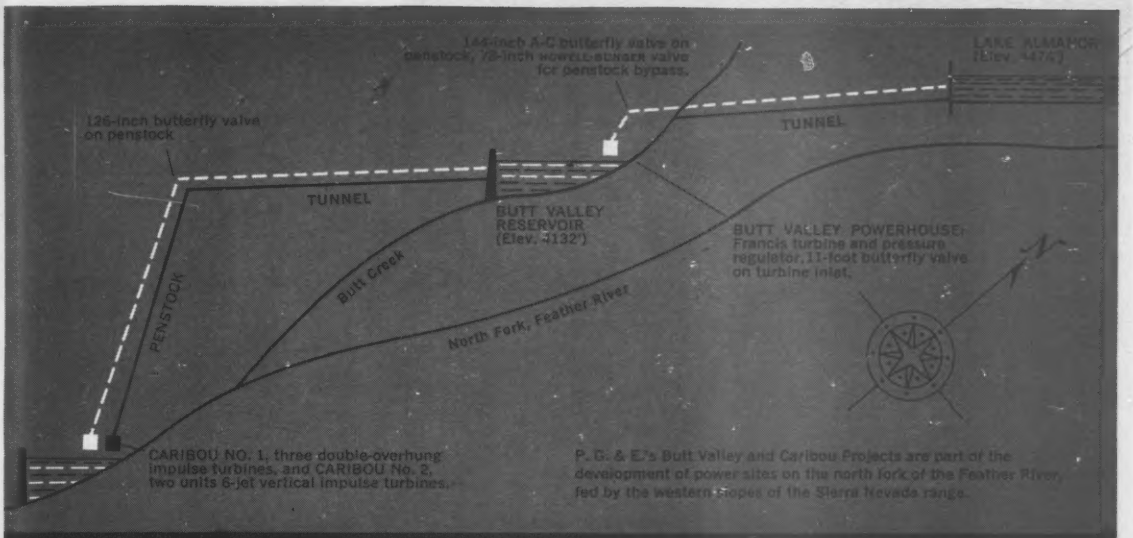
Again the big smile beams out, with parental pride this time, as he tells of his now-grown family's exploits. Son John, now a Jesuit priest and once a Naval Academy football player, made national news recently as the first Navy chaplain appointed to serve with the atomic submarines. It's a proud father who speaks of this—and the accomplishments of the other eight.

And his staff members sit and listen as he talks. They've heard the stories, but they know the man and what gives him pleasure. They respect him as a demanding boss who wants straight talk and can give it in return. "Don't play words with me," he says. Says one of his staff, "He can spot a phony a mile away."

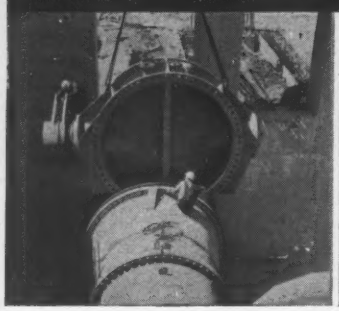
This week, as his good friend and political associate, Governor Lawrence, came to help dedicate Pittsburgh's completed treatment plant, John Laboon could quit driving himself and his staff for at least a day before getting back to the problems of operation.

It was a difficult job, but he'd pushed it through.

(*Men and Jobs continued p. 70*)


144-inch A-C butterfly valve on penstock, 72-inch HOWELL-BUNGER valve for penstock bypass.
LAKE ALMANOR (Elev. 4474')
126-inch butterfly valve on penstock
TUNNEL
TUNNEL
BUTT VALLEY RESERVOIR (Elev. 4132')
BUTT VALLEY POWERHOUSE: Francis turbine and pressure regulator, 11-foot butterfly valve on turbine inlet.
PENSTOCK
Butt Creek
North Fork, Feather River
CARIBOU NO. 1, three double-overhung impulse turbines, and CARIBOU No. 2, two units 6-jet vertical impulse turbines.
P. G. & E.'s Butt Valley and Caribou Projects are part of the development of power sites on the north fork of the Feather River, fed by the western slopes of the Sierra Nevada range.

The 11-foot butterfly valve on the Butt Valley turbine inlet is shown being lowered into position.



Turbine spiral case in position at Butt Valley prior to the installation of the turbine runner.

Pressure regulator inlet elbow being positioned. Spiral case is at the left and energy absorber and discharge chamber below.

Allis-Chalmers Turbines, Pressure Regulator and Valves Installed at Butt Valley and Caribou Powerhouses, No. 1 and No. 2.

At Pacific Gas & Electric Company's new Butt Valley Powerhouse development, an Allis-Chalmers vertical Francis turbine with pressure regulator, two butterfly valves and one HOWELL-BUNGER valve are installed. This turbine is rated at 55,000 HP at 200 rpm under a 280-foot rated head.

A stalling-type pressure regulator, with provision for quick and simple conversion to synchronous bypass control, it's attached to the spiral case. Designed for a minimum opening time of 3 seconds, the pressure regulator is required because of the 5703-foot long penstock and the relatively remote location of the surge tank. An 11-foot A-C butterfly valve is located at the turbine inlet, while the other butterfly valve will be used as a penstock shutoff valve. The HOWELL-BUNGER valve serves as a penstock bypass.

Down stream from Butt Valley is Caribou No. 1 Powerhouse, with 3 Allis-Chalmers horizontal, double-overhung impulse units, 30,000 HP each, two units paralleled 1921, the third unit paralleled 1924, and Caribou No. 2 Powerhouse, completed along with Butt Valley in 1958. Caribou No. 2 has two Allis-Chalmers vertical, 6-jet impulse turbines, each rated 76,000 HP at 1110-foot head at 240 rpm. At each turbine inlet is a 54" rotary valve of latest Allis-Chalmers manufacture.

You can look to Allis-Chalmers for the latest in design, engineering and manufacturing of a complete line of hydraulic turbines and their accessories. For further information, contact your local Allis-Chalmers office or write Allis-Chalmers, Hydraulic Division, York, Pa.

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ENR Awards Scholarship To Leonard W. Chapman

Leonard W. Chapman, a 27-year-old engineer, receives the 1959 ENGINEERING NEWS-RECORD aid-to-education award.

Mr. Chapman graduated from Williams College in 1953 with a degree in architecture and is now studying municipal engineering at the University of California.

A native of Walnut Creek, Calif., he worked for two years in the city engineer's office at Hayward, Calif., and more recently, as a junior civil engineer in a private civil engineering office.

From 1954 to 1957 he was electronic maintenance and operations officer in the Navy.

The award, which includes $1,000 for study in public works engineering, was presented at the Public Works Congress and Equipment Show in Seattle last week.

The scholarship was first given in 1954 to aid students in graduate study. Candidates are judged according to scholastic record, interest in work and office cooperation.

Careers

Associations

Robert W. Bower is the new administrative manager for the American Institute of Timber Construction. A former U. S. Navy warrant officer and administrative specialist, Mr. Bower will also serve as administrative assistant to the association's vice president.

John M. Hess, architectural engineer, has been named technical director of the Douglas Fir Plywood Association. His department will spend $900,000 this year for plywood quality control, product and applied research. He joined the association in 1951 and for three years has been assistant technical director.

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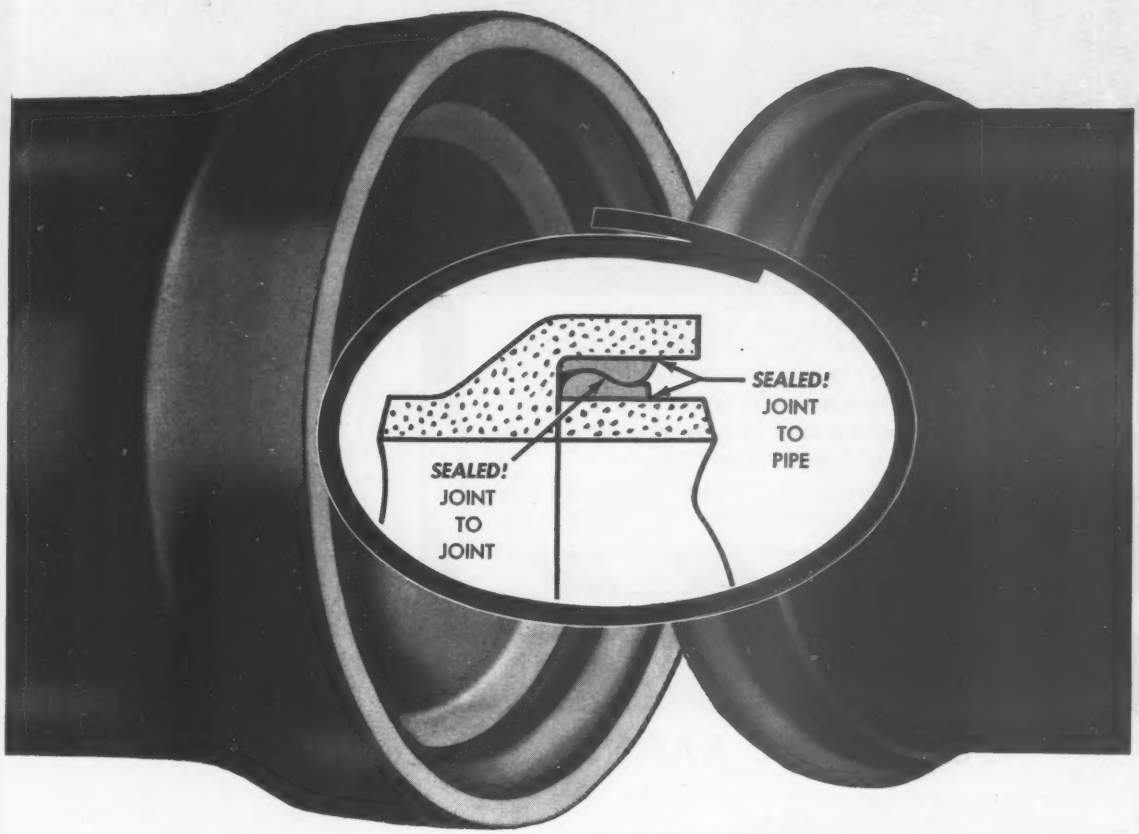

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Rudy McInturff, Master Mechanic in charge of 27 machines for Cascade Eastern Timber Co., Warm Springs Indian Reservation, Oregon

"Track bolts sold by Caterpillar last as long in our volcanic rock as nickel-plated bolts costing 40% more. They don't need lock washers either!"

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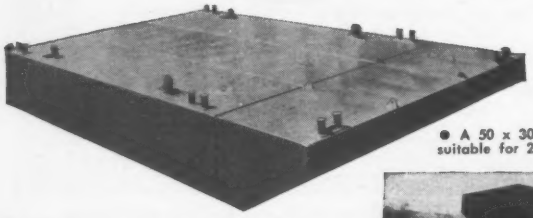

● A 50 x 30 foot four-section barge suitable for 2 yard dragline or clam.

★ Designed specifically for the contractor who has need for transporting his floating equipment in a short time with the least effort and expense. By quickly and easily bolting together any number of sections, the contractor has an extremely adaptable piece of equipment to provide an economical solution to any floating problem. Dragline, trench hoe or clamshell dredging, pile driving, crane lifting, pumping, pipe laying or floating equipment are some of the many uses of the versatile Manitowoc Sectional Barge.

Write for additional information and prices. Sold direct or through Manitowoc Engineering Corporation distributors.

● Easily transported by rail or highway.

● Assembled barge with crane and spuds.

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MANITOWOC, WISCONSIN

. . . Men and Jobs

John F. Wich of Lardner and Wich, Baltimore contractors and engineers, has been appointed to the national panel of arbitrators of the American Arbitration Association. He is also the immediate past president of the Baltimore chapter of Associated General Contractors.

Philip W. Cloyes, contracts manager for Selby, Battersby Co., Baltimore and Philadelphia tile contractors, has been elected president of the National Terrozzo and Mosaic Association.

Public Works

Thelbert D. Gupton has been named superintendent of public works for Henderson, N. C.

Capt. James W. Clawson has been assigned to Kindley Air Force Base, Bermuda, as assistant area engineer.

John C. Jenkins is new sanitary engineer for Lake County, Ohio. He has been with the county since 1954.

James W. Shocknessy, Columbus, Ohio, attorney and chairman of the Ohio Turnpike Commission, has been appointed to a second term heading the commission. Serving since 1949, he directed the commission during the construction of the Ohio turnpike.

Two officers with the Navy Corps of Engineers have been promoted to the corps highest grade, Rear Admiral. They are **Rear Admiral Norman J. Drustrup,** district public works officer of the fourth naval district at Philadelphia, and **Rear Admiral James R. Davis,** assistant chief of maintenance and materiel, Bureau of Yards and Docks, Washington, D. C. Rear Admiral Drustrup is a 1933 graduate of Annapolis and holds bachelor of civil engineering and master of civil engineering degrees from Rensselaer Polytechnic Institute. Rear Admiral Davis was previously district public works officer for the thirteenth naval district in Seattle.

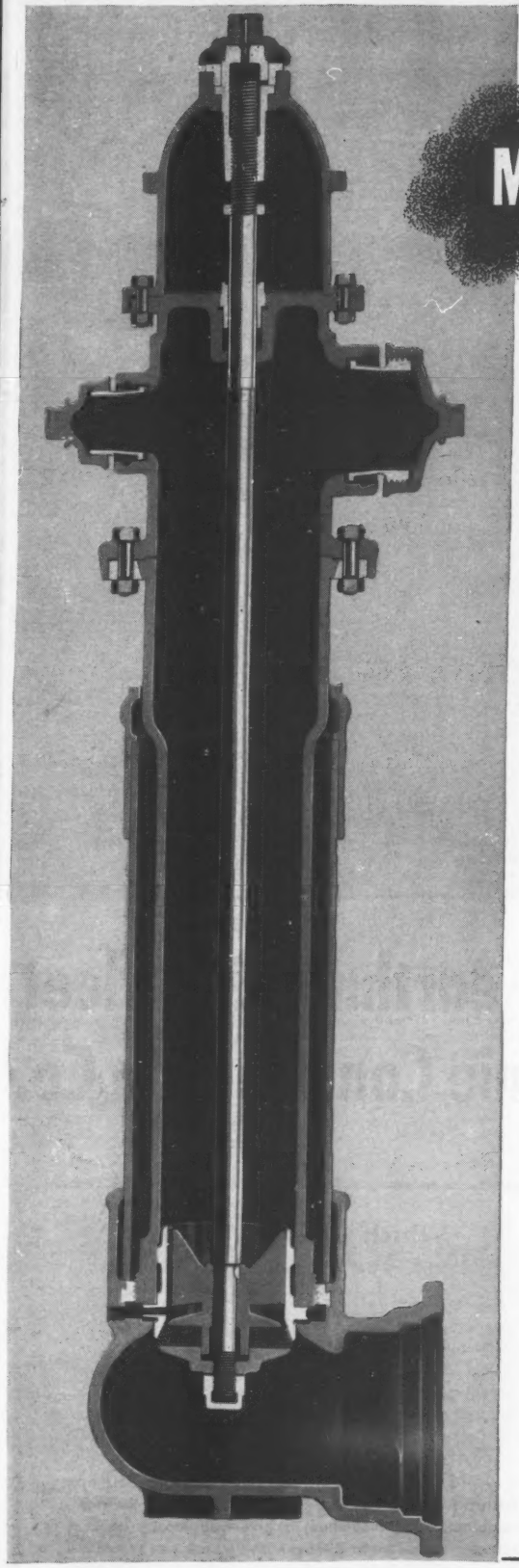
Retirements

C. Robert Fulton retired from his partnership in Fulton & Cramer, Lincoln, Neb., consulting engineers.

Lynn W. Henry, Ohio County engineer, resigned after ten years to take up private engineering.

Preston T. Bennett retires as chief of the geology, soils and materials branch of the Missouri river division of Army engineers. He was involved in the building of all the Missouri river dams and has been a consultant on foreign dam construction.

Raymond C. Baird retired as special assistant to the division engineer in the Army Corps of Engineers' southwestern division, Dallas. He had been with this division for 18 years.



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and many other quality features, too

Replaceable barrel for maximum efficiency—quickly replaced in case of accident without excavating

Head revolves 360°; simply loosen bolts and rotate

Stuffing box plate cast integrally with nozzle section—eliminates extra part and provides positive, leakproof construction

Operating thread, protected by stuffing box plate, operates free of rust, sediment and ice

Also . . . Nozzle sections supplied with hose or pumper outlets as specified • Operating thread cannot be bent • Compression-type main valve prevents broken Mathews from leaking • Nozzle level can be raised or lowered without excavating • Bell, mechanical-joint, or flange-type pipe connections • Conventional or "O" ring packings • Meet all requirements of AWWA specifications

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Public Ledger Building, Independence Square, Philadelphia 5, Pa.

Manufacturers of "Sand-Spun" Pipe (centrifugally cast in sand molds) and R. D. Wood Gate Valves

LW PHOTO REPORT

Big, high-production earthmoving fleet sets fast pace for Canonie Construction Co.

With a big fleet of LeTourneau-Westinghouse high-production earthmovers — consisting of 21 C Tournapulls® with 18-yd Fullpak® scrapers, 4 D Tournapulls with 9-yd scrapers, 2 Tournatractors®, and a 123-hp LW grader — Canonie Construction Co. of South Haven, Michigan, handles jobs from 50,000 to 5,000,000 yd with equal efficiency. And Canonie finds the flexibility and mobility of this fleet easily adaptable to the handling of a number of jobs at the same time.

On the job pictured — moving 650,000 yd of earth to rebuild 7.5 miles of Michigan Route 140 — Canonie worked all of his LW machines except 3 C Fullpaks, which were working on a building site in Kalamazoo.

Which size LW fleet is best for YOUR operation?

As you plan for future operations, it is worth your while to investigate the flexibility and overall economy of LW earthmoving equipment. These machines incorporate all of the latest engineering advantages developed over the years by LW engineers, and proved in thousands of hours of actual field operation. With an LW fleet you can be assured of top production, economy, and profit on *any type of job*. Tournapull scrapers are available in 9, 18, 20, and 28-yd capacities; 143 to 360 hp. Each fits specific job problems. You can have the right combination of machines to give you most for your money. We'd like to discuss with you the size machines best for YOUR fleet operation.

In rapid succession, Canonie's fast-moving C 'Pulls* dump loads of sticky clay to build bridge-approach. The positive-ejection tailgate on the LW scraper, has plenty of power to force out sticky clay, mud, rocks — wipes bowl clean in a single pass. Control of tailgate is by positive electric control.

Here, one of 21 C Tournapulls owned by Canonie Construction is push-loaded with sand, building 7.5 miles of Michigan State Route 140, between Covert and Watervliet. Says Mr. T. Canonie, President of the firm, "The low, wide Fullpak scraper-design *cuts seconds off loading time. In a couple of weeks, this adds up to a substantial amount of bonus yardage.* And we like 'Pulls electrical system . . . certainly makes it easy for our operators to control their units."

One of two Tournatractors owned by Canonie Construction Co. backfills around a culvert on the 650,000-yd Michigan Route 140 project. Comments Mr. Canonie, "You can move this rubber-tired tractor from one location to another without the necessity of bringing in a low-boy trailer. As a matter of fact, we have a 2-way radio system in our LW tractors so we can move them around fast . . . without wasting time tracking 'em down.

"We think our Tournatractors are great for leveling *and compacting* fill," continues Mr. Canonie, "the rolling action of their big tires as they work across the fill gives us all the compaction we need. We hydroflate the tires to get added weight." (With tires hydroflated, Tournatractor itself provides bonus compaction equivalent to an extra 20-ton roller.)

Small-yardage and clean-up jobs are handled fast and efficiently by Canonie's 4 LeTourneau-Westinghouse D Tournapull scrapers. Here, two of these 29.5-mph "Handymen" are shown self-loading sandy soil as they handle finish work on a Michigan road job. Only 8'-wide and within the 9-ton axle-load limit, D 'Pull can be driven from job-to-job via highway or city streets without permit.

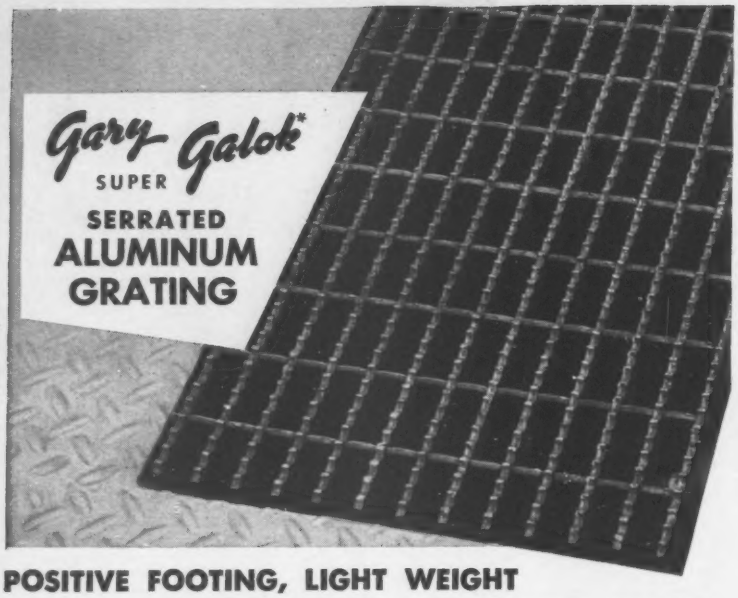
For the type of work done by Canonie Construction Co. the LW 550 is considered a sound grader investment. Here this 123-hp grader cuts trench for 6,600'-long tile line near Watervliet, Mich. Equipped with 8'-wide dozer blade, Canonie's versatile LW 550 handles backfilling and other light dozing jobs as well as regular grading assignments.

*Trademark CP-2067-DCJ-2

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit



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*Patents Pending

Gary SUPER Galok aluminum grating also available with plain bars. Both the serrated and plain types in sizes for every need.

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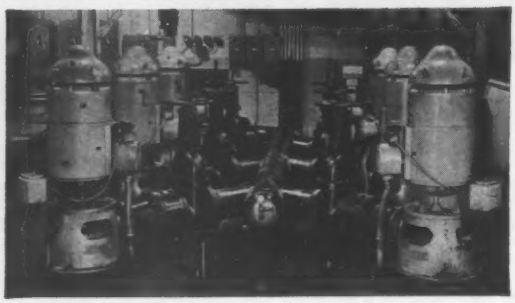
3 times the capacity in one-third the space...



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VERTICALS ARE VERSATILE, TOO: Primary water supply, sumps, pipe lines, refineries, condenser lines and boosters, circulating, dewatering, volatile fluids, cooling towers.

For complete details on these space and money savers, send for colorful bulletins.

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Obituaries

Gilbert D. Fish, 66, Dies; Structural Welding Pioneer

Gilbert D. Fish, 66, pioneer in structural welding and a partner in the New York City consulting firm of Seelye, Stevenson, Value & Knecht, is dead. Mr. Fish designed the nation's first arc welded bridge in 1928 for the Chicopee Falls plant of the Westinghouse Electric & Manufacturing Co. Subsequently he acted as a consultant for Westinghouse in promoting structural welding.

Later, as an independent consulting engineer, Mr. Fish was responsible for the design of many welded buildings. He was a leader in developing standards and specifications for welded design and was the author of several books on structural welding. He was also a frequent contributor to ENGINEERING NEWS-RECORD.

Mr. Fish was a former president of the American Welding Society, and taught at both Yale and Columbia Universities.

Henry M. Nodland, 66, founder of the Henry W. Nodland Construction Co., Alexandria, Minn.

Harold W. Pepper, 62, sales manager of Lyons Engineering Co., Ltd., Toronto and general manager of McLean's Building Reports.

Paul B. Chase, 65, retired New York State civil engineer.

Vinton D. Cockey, 75, Maryland engineer and land surveyor.

William L. Walter, 57, city engineer for Frederick, Md., since 1939.

Darwin Hudson, 82, retired engineering executive for the Consolidated Edison Co., New York City.

Edward Wise, Jr., 65, maintenance-of-way engineer for the Louisville & Nashville Railroad. He had been with the company for 46 years.

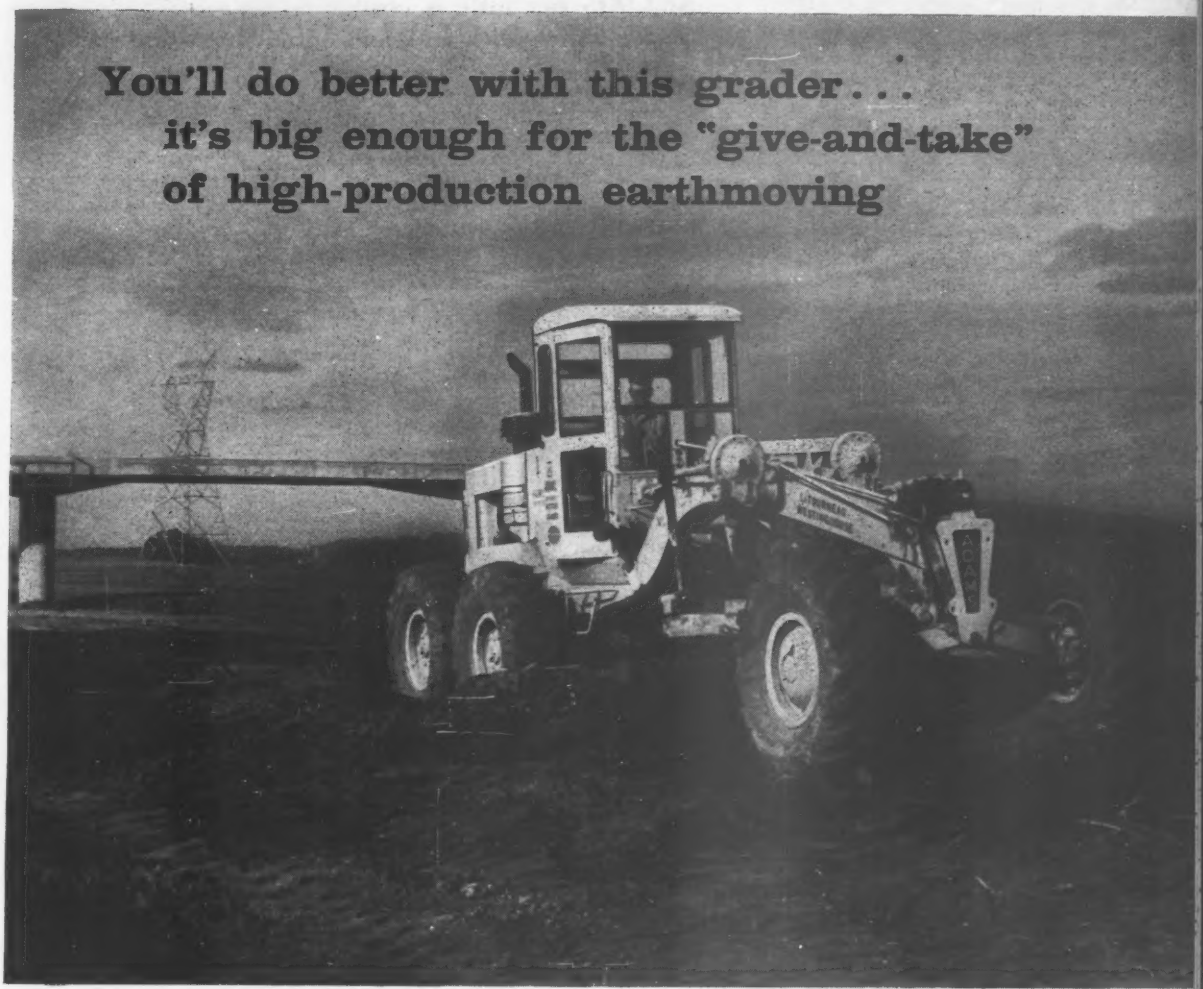
Harlan Bailey, 58, electrical contractor and manager of Bailey Service Co., Bedford, Ind.

Oliver G. Hughson, 94, developer of "minimalic construction," a method for teaching building construction through the use of kits.

L. H. Hoffman, 75, founder of Hoffman Construction Co., Portland, Ore. He was also an architect and had been commissioner of the Port of Portland since 1949.

Moving 2½ million yd of clay on a 15-mi stretch of the new interstate highway near Sioux Falls, S.D., the Aberdeen firm of Harris Construction Co. used 3 LW Model 660 graders. These heavy-duty machines, 2 standard transmission 160-hp units and one 190-hp POWER-*Flow* torque-converter grader, worked with a big fleet of scrapers, grading haul roads and spreading material in fill areas. When necessary they also handled ditching, sloping, and finishing jobs.

You'll do better with this grader . . . it's big enough for the "give-and-take" of high-production earthmoving



Graders have grown in size during the past few years for a good reason. It takes a big, extra-weight, extra-power grader to match today's big scrapers and tractors for the shock-absorbing, high-production work required of them. Take the LeTourneau-Westinghouse* Model 660 for example; here's strength, power, speed, and handling ease that out-works 'em all. Here's a grader *designed* to make use of high horsepower and extra-weight.

Frame — heavy-duty, all-welded from end to end . . . to withstand all shocks and body torsional stresses.

Power — 160 hp with constant-mesh, manual-shift transmission, or 190 hp with automatic speed-adjusting POWER-*Flow*® torque converter.

Engine mounting — cushioned in rubber at 4 points to soak-up vibration . . . for less operator fatigue, longer machine life.

Drive — tandem type, with full power on all 4 rear wheels.

Speeds — 8 forward and 4 in reverse, plus 3 extra-low forward speeds through optional "creeper" gears in the "660" "straight-stick" model — infinite speeds in 4 forward and 4 reverse ranges on the torque-converter POWER-*Flow* model. Both models have fast, accurate control action.

Weight — over 14 tons for each model.

Blade — fully revolving, full 90° bank-slope position, held steady by big 63" circle gear.

Combine these advantages and you can easily see why the LW 660 can "dish out" the work and handle your big grading jobs at highest profit. Ask for complete details.

*Formerly known as Adams Graders G-2110-DCJ-1

LW

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

ESTIMATING STRUCTURAL STEEL

Including Structural Aluminum and Miscellaneous Materials

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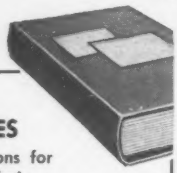

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Delaware Road Improved

$83,905 per mile is cost to widen, drain, resurface 5.347 miles with hot laid bituminous concrete

To get comparative prices on the hot mix wearing course for this 5.347 mile reconstruction and drainage job in Kent County, Del., the State Highway Department, Dover, took bids two ways: The first alternate was for the standard specification, using crushed stone and stone screenings as aggregates; the second alternate was on bank run hot mix. The award at $448,639 to George & Lynch, Wilmington, was on the first alternate, $1,475 above his bid for the bank run alternate. Raymond Johnson, Dover, is state highway engineer.

At a cost of approximately $83,905 a mile, the present 15-ft roadway will be widened with portland cement concrete, 4.5 ft on each side. The entire 24-ft roadway will then be surfaced with hot laid bituminous concrete.

Minimum wages range from a high of $1.50 for skilled, through $1.25 for semi-skilled, to $1.00 for common laborers.

The bidding included:

1C	George & Lynch, Inc., Wilmington, Del.	$448,639
2	Edgell Constr. Co., Inc., Dover, Del.	471,119
7	Wilson Contr Co., Inc., New Castle, Del.	633,419
EE	Raymond Johnson, State Hwy. Dept., Dover	510,000

Bids: 6-10-59 Items	Unit	Quantity	Unit Prices 1C	2
Clear & grub	ls	job	$12,000	$7,200
Excavation	cy	23,400	1.50	0.60
Masonry, remov existing	cy	76	30.00	10.00
Excavation, structures	cy	250	6.00	5.00
Borrow	cy	200	2.00	1.00
pit stripping	cy	100	1.00	0.40
select	cy	13,200	1.50	1.00
Port cmt conc base course	cy	5,700	22.00	19.00
with crack contr	cy	1,200	22.00	19.00
Binder crse, asph conc pavement, hot mix, hot laid	t	10,500	9.50	8.50
Wearing course, asph conc pave alt. A, hot mix, hot laid	t	5,900	9.50	8.50
alt. B, bank run, hot mix	t	5,900	10.00	8.20
Asphalt, R.C. 1	gal	10,800	0.16	0.15
R.C. 3	gal	10,800	0.16	0.15
Crushed stone or gravel	t	430	7.00	5.70
slag	t	430	7.00	5.70
Portland cmt conc pavement	cy	340	32.00	20.00
patching	sy	1,000	14.00	10.00
masonry	cy	120	110.00	75.00
Waterproofing, superficial	sy	175	2.00	1.50
Bar reinforcement	lb	9,000	0.20	0.12
Struct steel anchor bolts	lb	220	5.00	0.50
Reinf conc pipe, 12"	lf	2,400	4.00	3.15
15"	lf	2,550	4.50	4.50
18"	lf	1,600	6.00	5.00
21"	lf	1,820	8.00	5.70
24"	lf	434	9.00	6.75
48"	lf	96	26.00	17.00
extr str, 15"	lf	236	6.00	4.90
36"	lf	96	18.00	12.50
jacked in	lf	20	200.00	20.00
Asph ctd cor met pipe, 24"	lf	20	20.00	7.05
18x11"	lf	550	8.00	5.26
22x13"	lf	420	9.00	5.70
29x18"	lf	800	9.50	7.50
36x22"	lf	70	20.00	8.70
Vit clay pipe, 4"	lf	100	3.00	2.00
6"	lf	100	3.00	2.00
8"	lf	100	3.20	2.00
Underdrain, 6" CMP perf	lf	750	4.00	2.30

Bids: 6-10-59 Items	Unit	Quantity	Unit Prices 1C	2
Timber sht piles, untreated Mfbm		6	500.00	300.00
Cmt conc gutter around P.W.-B.D. catch basins	sy	380	7.00	5.00
Port cmt conc curb, type 1	lf	4,700	2.50	2.00
type 2	lf	2,560	2.50	2.00
sidewalk, 4"	sf	18,000	0.50	0.47
6"	sf	4,800	0.75	0.57
Catch basin, type A	ea	28	150.00	120.00
type P.W.-B.D.-1	ea	4	175.00	160.00
type P.W.-B.D.-2	ea	20	300.00	170.00
type P.W.-B.D.-4	ea	27	350.00	200.00
Manhole, standard	ea	20	500.00	190.00
Minor instals, adjust & repair	ea	4	50.00	20.00
Castings	lb	20,200	0.14	0.11
Gratings, P.W.-B.D.	sf	717.5	7.00	4.80
Topsoil, 4"	sy	4,150	0.50	0.15
Seeding	ac	12	400.00	225.00
Mulching	sy	52,000	0.15	0.06
Sodding	sy	500	1.00	0.70
Sand	t	420	6.00	4.00
Cement, extra	bag	100	2.00	1.40
Lateral ditching	lf	1,400	1.50	0.70
Calc chlor, dust control	t	10	65.00	55.00
Riprap, grouted	sy	90	20.00	7.00
Asphalt tack coat, R.C.-1	gal	8,600	0.16	0.15
M.C.-0	gal	240	0.50	0.15
Junction box, special	ea	1	3,000	150.00
Window well	ea	2	500.00	75.00
Drain structs, sta 240+60, remove	ls	job	1,000	60.00
Structures, remov existing	ls	job	2,000	400.00
Maintenance of traffic	ls	job	5,000	1,400
Borrow, select, trm	cy	400	5.00	1.50
Cold laid bit conc, trm	t	200	20.00	8.00
Quarry waste, trm	t	200	8.00	4.00
Field office	ls	job	5,500	3,400

trm Temporary road materials
Commence: 6-29-59. Complete: 12-15-59.
Liquidated damages: $80/cal day.

Harbor Dredging Is 50% Below Estimate

Approximately 159,000 cu yd of material will be dredged from Red Brook Harbor, Bourne, Mass., to 8 ft at mean low water, to construct an approach channel 3,500 ft long and 100 ft wide, and an 800-ft-square basin.

The award at $108,620, by the Massachusetts Department of Public Works (waterways), Boston, went to New England Dredge & Dock Co., New Haven, Conn., on a low bid 50% under the engineer's estimate and 34% below the high of four bids.

Prevailing wages include: dipper dredge operator $3.425, cranesmen $3.30; engineers $3.425; maintenance engineers $3.20; deck hands $2.34; firemen & oilers. $2.49, all on a 40-hour basis.

1C	New England Dredge & Dock Co., New Haven, Conn.	$108,620
2	Ercon Constr. Corp.	138,240
4	Marine Development Co., Hyannis, Mass.	*164,270
EE	Dept. of Public Works, Boston	216,150

* An informal bid

Bids: 8-11-59 Items	Unit	Quantity	Unit Prices 1C	2
Dredging & disposal of matl	cy	159,000	$0.68	$0.86
Rock & boulders, remov & dispose of	cy	50	10.00	30.00

Completion schedule: 90 days

The faster you get to a job... the quicker you complete it... the more return you get on your tractor investment

In less than 4 minutes, a fast LeTourneau-Westinghouse Tournatractor® drives a mile to your next job. This mobile 17-mph LW tractor travels anywhere under its own power — via highway, or cross-country.

When moving to a new project, Tournatractor saves you time and expense of moving in extra men, extra transport equipment... loading, blocking, and unloading.

This 218-hp rubber-tired tractor not only saves time traveling job-to-job ... it saves time *on the job*. With its higher *working* speeds, both forward and reverse, torque-converter equipped Tournatractor completes most assignments *faster* than "track" units of comparable power. And the *range* of work Tournatractor will handle is wide. It will do ALL your normal dozing and "push-pull" jobs, with all the "muscle" you need.

Figure for yourself what these advantages mean to you:

1. Greater speed on the job: completes assignments faster.

2. Roadability: cuts moving costs, and non-pay hours of moving time.

3. Fast one-man moves: lets Tournatractor work more productive-hours per shift... lets you handle more work at lower cost.

LW Tournatractor has proved itself in every climate and in all kinds of working conditions. It can save YOU time and money. Get full details on this versatile, high-speed tractor-on-rubber.

CT-2140-G-1

LW Tournatractor has anti-friction bearings throughout... with sealed-in lubrication to protect against weather, dust, and wear. What's more, this rubber-tired tractor has far fewer moving parts and far fewer exposed parts than crawlers, so all phases of maintenance — from inspection to lubrication — are greatly simplified, to save you money.

LW

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

One of six Absecon Boulevard bridges supported by pressure-creosoted piling that connect Atlantic City and Absecon, New Jersey.

Important time and money savings were made on this New Jersey project, when engineers discovered the long-run value of creosote protection. Originally, plans called for widening the bridge with a concrete deck over new concrete piling. Upon investigation, engineers were surprised at the remarkable condition of the piling—even after 33 years of service! In fact, the *old* piling was so good that it was used as the supporting structure of the *new* concrete deck—another on-the-job test of the long-run economical service provided by creosoted piling.

Whether it be bridges, culverts or other road structures, investigate pressure creosoted lumber because of its:

MULTIPLE TOXICITY: Marine borers, fungi and wood-destroying insects cannot develop immunity to the many toxic agents in creosote.

PENETRATION EASILY CHECKED: You can see the depth of penetration in any cross section.

THE TIME-PROVED PRESERVATIVE: Pressure-creosoted wood has remained sound without costly maintenance for generations.

PLASTICS AND COAL CHEMICALS DIVISION
40 Rector Street, New York 6, N. Y.

Allied Chemical

Materials Prices

Monthly Market Quotations by ENR Field Reporters

STRUCTURAL CLAY BUILDING TILE, BRICK AND LIME—DELIVERED

	STRUCTURAL CLAY TILE PARTITION—SCORED Per M. lots of 2,000 pieces or over, 3x12x12 in.	4x12x12 in.	8x12x12 in.	STRUCTURAL CLAY TILE—LOAD BEARING—SCORED Per M. lots of 2,000 pieces or over, 8x12x12 in.	10x12x12 in.	12x12x12 in.	BRICK Per M. in quantity Common backing	Straight hard	LIME Per ton, in paper, Carload lot, Hydrated finishing	Common hydrated	Pulverized
Atlanta	$170.10pe	$153.25pkkv	$306.55pe	$344.85pe	.....	.....	$31.50uu	$33.75uu	$36.50kk	$28.50kk	$28.50kk
Baltimore	217.00	231.00	434.00	491.00	602.00	690.00	36.00	41.00	35.60	23.20	.....
Birmingham	135.00pss	152.00pss	.....	303.00p	376.00p	465.00p	27.00ff	38.00jj	38.28mm	20.87mm	26.33mm
Boston	332.00†mm	348.00†mm	463.25†mm	556.00†mm	.....	.....	43.50p	58.00p	42.00§	34.00§	.....
Chicago	127.00ll	149.00ll	280.00ll	.....	.....	.....	32.00	34.00	38.60ll	35.20ll	.....
Cincinnati	160.00mmvv	172.00jmmvv	337.00jddmm	390.00jmmvv	425.00jmmvv	500.00jmmvv	48.00jk	47.00jk	29.10jmm	25.10jmm	29.10jmm
Cleveland	200.00tt	213.00tt	.....	453.00tt	.....	693.00tt	41.75tt	45.75qgtt	32.75ptt	23.00ptt	.....
Dallas	155.00	155.00	306.00	370.50	432.25	560.00	27.50	49.00	41.80	24.55	28.50
Denver	170.00	185.00	310.00	310.00	390.00	442.00	30.00	54.00	48.00p	43.00p	46.00p
Detroit	242.00mm	258.00mm	483.00mm	548.00mm	723.00mm	827.00mm	51.50pmm	52.00pmm	38.00mm	30.00mm	40.00mm
Kansas City	158.00	158.00	312.00	312.00	400.00	500.00	34.00	34.00	36.26	34.36	29.76
Los Angeles	r	r	r	r	r	r	38.00uu	.....	38.00mmll	38.00mmll	39.00mmll
Minneapolis	192.00pe	215.00pe	437.00pe	215.00pee	.....	.....	45.50epe	54.00ype	49.00bbe	38.00bbe	52.00bbde
Montreal	168.78augee	180.93augee	325.00augee	220.00gee	400.00gee	.....	48.35611	56.3061l	39.00	22.00	13.25
New Orleans	198.00	198.00	370.00	370.00	.....	.....	42.00	55.00	44.00	32.00	32.00
New York	177.00k	189.00k	283.00ck	285.00kn	.....	.....	46.00p	.....	40.00p	38.00p	.....
Philadelphia, R*	202.10ss	215.60ss	323.40ss	485.10ss	.....	.....	40.00mm	50.00mm	27.60mm	21.50	21.50
Pittsburgh	200.00t	213.00t	400.00t	453.00t	607.00t	659.00t	39.00t	46.00t	38.00t	33.00t	34.00t
St. Louis	172.00mmpp	180.00pp	375.00pp	401.00ppp	459.00pp	631.50pp	44.00mmpp	45.50pp	1.00aapp	.80aapp	1.35aapp
San Francisco	156.85*mm	177.10*mm	235.30dd*mm	159.40qqmm	.....	.....	43.00*mm	43.00*mm	29.24mm	29.24mm	31.74mm
Seattle	235.00pt	270.00pt	490.00pt	265.00ppwt	.....	.....	52.00bbt	66.00t	52.00bbt	38.00bbt	4.50mbbt
Toronto	158.00rr	173.00rr	336.00rr	263.00frr	378.00rr	.....	25.00rr	63.00rr	38.00mm	34.50mm	33.50mm

*§ F.o.b. yard. **† F.o.b. plant Stockton. †† F.o.b. yard Roxbury. *a Smooth. *b $4.50 del. *c 8 x 12 x 12 in.-6 cell. *d Pulverized hat. *e less 5% disc., 10th., *f 8 x 8 x 12. *g Lumps, $28.72. *h F.a.b. trucks, job site N.Y.C. *i 60 lb sacks. *j Truck load or over. *k $1.00 discount per M, 10 days. *l Red face. *m Per bb!. 180 lb. processed. *n 7¾ x 7¾ x 12. *o Mason's double hydrated pressure. *p Truck lots. *q Provincial and Municipal tax extra (6%). *r Not used: earthquake danger. *s 8 x 16 x 12. *t less 2% disc., cash. *u Incl. Federal tax. *v Sand lime. *w 5 x 8 x 12. *x dumped. *y Chi common. *z Pebble; 80 lb sack. *aa 50 lb sack. *bb LCL. *dd 6 x 12 x 12. *ff 80% common. *gg Smooth. *hh less 2½ disc., cash. *ii F.a.b. plant. *jj rough; smooth; $40. *kk 3½ x 11½ x 11½. *ll less 2% disc. 10th. *mm less 2%, 10 days. *nn F.o.b., L. A. *oo less 2%, 30 days. *pp add 2% sales tax. *qq 8 x 3½ x 11½. *rr 2½% disc., 10 days. *ss 8% disc., 10 days. *tt less 2% disc., 15th. *uu less 5%. *vv 4000 pcs. and over *R revised. ‡ eff. 3/1/59. * Philadelphia prices revised, watch for analysis

PAINT, ROOFING—F. O. B. CARLOAD LOTS

	RED LEAD Per 100 lb. in 600 lb. (Approx.) bbl. F.O.B. Plant Dry a C	WHITE LEAD Per 100 lb. in 100 lb. cases In oil	READY-MIXED PAINT Per gal., drums Graphite b	Aluminum e	Ferric Oxide d	ROOFING SUPPLIES; Carload lots f.o.b. factory Rolls, slate surfaced, 65-90 lb. per sq.	Asphalt felt, per 100 lb.	Tar felt, per 100 lb.	Asphalt coating per gal.	Tar pitch 380 lb. bbl. per ton
Atlanta	$13.75ggJO	$24.00ggJ	$3.59	$3.86	$3.31	$2.90kk	$2.12kk	$2.49kk	$0.67kk	$63.50kk
Baltimore	17.50gg	24.00	3.00	4.40	3.80	2.78	4.25	.48	.56	56.75
Birmingham	26.00†J	29.00†J	3.90J	3.40J	.....	3.06†mm	3.28ii†mm	.75ffmm	.75ffmm	45.00eemm
Boston	24.95†oomm	26.90†mmm	.....	.....	.....	3.74q	3.48q	.55q	.56	56.00p
Chicago	15.25Jqqgg	24.00†J	.....	.....	.....	3.80ukk	2.76okk	3.00okk	48.00bbkk	57.70†kk
Cincinnati	15.25†JO	24.00†J	.....	.....	.....	2.87mm	2.02mm	2.42mm	.428mmm	55.96Hmm
Cleveland	25.65†	26.90†	2.46gg	2.70gg	3.08gg	2.82q	2.05o	2.42o	.484y	49.00gg
Dallas	22.50	23.50M	.....	3.25B	.....	3.00u	3.00o	3.00o	.470	66.00kk
Denver	23.00n	24.00	3.98	5.20	3.70	2.86	2.12o	2.80o	.503f	50.00
Detroit	16.25r	24.00rr	2.70mm	3.95mm	2.70mm	2.82mm	2.05mmll	2.42mmll	.565fmm	49.00mm
Kansas City	26.90qqee	25.65	3.99	3.43	3.01	4.01mm	2.72mm	2.72mm	.80y	.....
Los Angeles	24.00O	24.00	3.30n	4.50n	4.20n	3.40nkk	2.40nikk	I	.75nykk	I
Minneapolis	17.23N	21.50kk	.....	.....	.....	3.28kk	2.50nikk	2.42kkk	.438kkk	50.00rkk
Montreal	19.45O	26.00wtt	5.82Dfft	6.85xfft	5.10kfft	5.40	4.65f	4.65f	1.60	4.40ww
New Orleans	23.00Jpp	24.00J	.....	.....	.....	2.78	1.98	2.85	.680	45.50
New York	16.25oO	29.75	.....	.....	.....	2.82	1.76o	2.43o	.438s	49.00*
Philadelphia, R*	16.25Omm	24.75mm	3.35mm	3.90mm	2.65Rmm	4.70	3.60	2.85	.515	50.00
Pittsburgh	21.00mggJ	24.00J	2.20qEJ	2.25qFJ	2.25qGJ	3.57nH	2.75nH	2.95H	.48H	55.00H
St. Louis	25.65†m	26.90	.....	.....	.....	3.20iimm	2.31kkK	2.96kkK	.428yK	62.00K
San Francisco	26.70mm	26.90mm	3.20mm	4.30mm	3.50mm	2.95mm	1.97aaimm	3.10mm	.463f	54.00
Seattle	13.35HO	24.00H	.....	4.19ccffJ	.....	3.64gccH	3.16kccH	.....	.55cc	.....
Toronto	14.45	20.85	5.15J	6.18J	5.95J	2.70	2.40aae	2.40e	1.01f	49.00A

*† Delivered. * Note: Red lead in oil 50% higher than white lead in oil. ** Aver. wt. approx. 425 to 550 lb drums. *a Red lead prices change frequently due to pig lead price changes. *b U.S. War Dept. Spec. 3-49A. *c ASTM Spec. D258-31. *d 80% minimum ferric oxide. *e Per 100 sf roll. *f Per 432 sq ft. *g F.o.b. yard Roxbury. *h Per roll, 65 lb. *i Net carload prices, Minneapolis and vicinity. *j 45 gal containers. *k Over 80% ferric oxide. *l Not used. *m 100 lb. keg. *n F.o.b. city. *o Per 50 lb roll. *p 6-drum, 50 gal each. *q Per 90-lb roll. *r F.o.b. factory, Chicago. *s Truckload. *t Incl. Federal tax. *u Per 90-lb square. *v Per ton. *x Ready-mixed. *y 55-gal container. *z Drums. *aa 16 lb. *bb Roofers coating and cement. *cc LCL, truck delivery. *ee Asphalt pitch in 100 lb package. *ff 5-g a drums. *gg F.o.b. factory. *hh Incl. freight. *ii Per 324 sf roll. *jj Asbestos roof coating. *kk less 2% disc., 10th. *mm less 2% disc., 10 days. *oo 100 lb bbls. *pp 50 or 100 lb bags. *qq 500 lbs or more *rr F.o.b. plant, Detroit. *ss 50 lb bbls. *tt 25 lb kegs. *uu 250 lb bbls. *A 400 lb barrels. *B ASTM Spec. D962-49. *C 96%. *D Std. black. *f Milit. spec.: E TTP27; F TTY61; G TTP31. *H less 2% disc., cash. *I Per 100 lb. *J less 1% disc., 10 days. *K add 2% sales tax. *L CL. *M 1 ton or more. *N under 500 lbs, add $1. *O 50 lb. bag. *P Effective 8/24/59. *R revised. * Philadelphia prices revised, watch for analysis.

PLASTER, VERMICULITE AND METAL BUILDING SHEETS & TUBING

	PLASTER‡ Neat per ton	Gauging per ton	VERMICULITE‡ Home Insulation pellets	Plaster aggregate	Concrete Aggregate Untreated	PERLITE‡ Plaster Aggregate	Concrete Aggregate Untreated	ALUMINUM Flat .100" th 36"x108" & 48"x144" per lbjt	SHEET† Corr roof .032" th 35"x12' per sht	STAINLESS STEEL† SHEET-TYPE 302q 20 ga 45"x96"-120" per cwthh	28 ga 36"x120" per cwtmm	COPPER WATER* TUBING-TYPE L 2000 ft lots per ft ⅜"b	½"c
			per bag of 4 cu ft										
Atlanta	$32.00ss	$42.00ss	$1.35ss	$1.65ss	$1.80sfss	$1.65ss	$1.65ss	$0.440noo	$8.83n	$65.68nss	$74.43nss	$0.1668ss	$0.2337ss
Baltimore	23.80	24.60	0.95	1.15	1.15	1.15	1.55	0.462	0.451r	63.00	71.25	0.16	0.2288
Birmingham	37.00ss	43.00ss	1.55ss	1.55ss	1.60fss	1.27ss	1.27fss	0.458M	9.62K	67.34K	76.09K	0.16ss	0.23ss
Boston	24.00	30.00	1.40	1.40	1.40	1.55ss	1.50ss	0.462	29.35p	64.42dd*zz	72.67dd	0.1668ss	0.2337ss
Chicago	26.80tt	26.80tt	1.55	1.60	1.60f	1.60	1.60	0.506z	10.294a	64.15ee	72.40ss	0.1762	0.2464
Cincinnati	23.85*ss	23.85*	1.75*ss	1.75*ss	1.75*ss	1.85ss	1.90ss	0.434	9.59	65.30zz	74.05zz	0.1668ss	0.2337ss
Cleveland	28.00N	45.00N	1.14ss	1.17ss	1.25fss	1.45ss	1.45ss	0.458aa	8.48	64.33oozz	72.58oozz	0.1633tt	0.2288tt
Dallas	30.65	32.65	1.07	1.23	1.37	1.21	1.37	0.484	0.517r	63.00	78.00	0.1668	0.1986
Denver	27.00	27.00	1.50	1.40	1.50	1.50ss	1.60ss	0.462	10.89	65.00gg	73.57gg	0.1668	0.2337
Detroit	28.00ss	28.00ss	1.27ss	1.31ss	1.40ss	1.45ttt	1.50ttt	0.452a	10.19a	65.15zzz*	73.90zzz*	0.1668	0.2337
Kansas City	30.00	35.00	1.19E	1.21E	1.29fE	1.21	....	0.444	23.20ggvv	67.50E	76.25E	0.1672	0.2464
Los Angeles	27.00tt	28.00tt	1.25ttt	1.20ktt	1.25tt	1.06	1.10	0.486	10.543	65.02	73.27	0.1668	0.2288
Minneapolis	35.00F	35.00F	1.65tt	1.80F	1.95F	1.40S	1.40S	0.468	16.23	63.61GR	69.61ffG	0.1762f	0.2067
Montreal	27.60h	35.60h	1.25h	1.40h	1.50h	1.15v	1.15v	43.95AH	12.10H	64.75H	.....	0.1840	0.2187
New Orleans	34.00	48.00	1.25P	1.35P	1.35P	1.25P	1.25P	0.526	24.90	71.50	72.45	0.1762	0.2464
New York	27.00	35.00	1.40	1.35	1.55	1.35	1.45	0.462aT	0.2335aR	64.08aB	72.33aB	0.1633	0.2288
Philadelphia	26.50	31.00ss	1.30ss	1.30ss	1.40fss	1.25ss	1.25qqss	0.44	9.46	63.00	71.25	.16/.18	.22/.24
Pittsburgh	30.00nn	33.00nn	1.50nn	1.50nn	1.50mm	1.50nn	1.5nnn	0.452	9.46	64.00	76.25pp	0.1555	0.1848
St. Louis	30.00uu	41.00uu	1.50uu	1.60uu	1.55uu	1.60uu	1.65uu	0.452	10.28	65.39Kmm	71.89yuu	0.1634fmm	0.1944fmm
San Francisco	29.50ss	30.50ss	1.38ss	1.38ss	1.50ss	1.38ooo	1.58ooo	0.502	9.76	66.50K	74.25K	0.1762	0.2464
Seattle	42.40nn	45.60nn	1.55nn	1.35fnn	1.55fnn	1.50k	....	0.513D	9.90D	68.77D	80.15D	0.1668	0.1752
Toronto	30.40	50.00	1.45	1.45	1.65	45.00Q	....	0.3995	24.75ap	73.74	86.52	0.2917	0.3265

‡trucklots, delivered †fob warehouse *fob city *a delivered *b ½" O.D. *c ⅝" O.D. *d per sf *e 34" x 60" sheet *f per 100 ft *g 5 tons & up; cold roll, anneal & pickled 2B finish *h incl. Federal tax *i add 25¢ for pint of additive *j 1100 & 3003 alloy, mill finish *k bag of 3 cu ft *l treated with air entraining agent *m 2-10M ft *n fob mill fr equalized with nearest stocking competitor *o 250 sacks or more *p 100 sq ft *r per lb *s 30 lb bag *t 36" x 108"; -10.81 lb/sh; 48" x 144"; 21.7 lb/sh *u 19.31 lb/sh *v fob plant *w 48" x 144" x 0.11"th *y 27 gauge *aa 16M lb & up *dd add $1.00 cwt boxing *ee 4 tons & up *gg add $2/cwt boxing; $0.76/cwt on skids *hh Theoretical wt for 48" x 96"; 60.4-lb. per sh *ii 300-bag lots *jj 100-lb bag *mm Theoretical wt; 19.7-lb per sh *nn 2% cash *oo skid packed *pp type 304 *qq Philadelphia and suburbs. *rr less 2% disc. 15 days. *ss less 2% disc. 10 days. *tt less 2% disc. 10th. *uu add 2% sales tax. *vv Type N. *ww Per 100 sf. *xx less ½% disc. 10 days. *yy .021 ga. *zz .061" th. *A Per 100 lb. *B crated. *C 15M lb. *D less ½ % for cash. *E Quantity differential. *F less 5% disc. 10th. *G less ½% disc. 10th. *H Fed. tax exempt. *K less ½%, 10 days. *L 5% disc. 30 days. *M 3003: .062 for 1100. *N less 2%, 15th mo. *O less $2, cash & carry. *P less 2%, 15 days. *Q per ton. *S add .10/bag under 200 bags. *T 5000# quantity on 4000# skids. *U 30 Msf quantity; $0.245 in 10 Msf quantity * Philadelphia prices revised, watch for analysis. *R per sq ft.

Labor and Materials Prices

Monthly Market Quotations by ENR Field Reporters

HOURLY WAGE RATES—Base rate + fringe benefits

	Common Labor: Building	Common Labor: Heavy Const	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Truck drivers: 1½ T	Truck drivers: under 4 cy	Truck drivers: over 4 cy
Atlanta	$1.825	$1.825	$3.85	$3.20	$3.45+7½¢	$3.325	$3.25	$3.50+10¢	$3.70+20¢	$1.825	$1.925	$2.75
Baltimore	2.20+7½¢	2.20+7½¢	4.10+10¢	3.30+7½¢f	3.90+7½¢	3.80/3.95+10¢	3.80+7½¢	3.75+7½¢	3.74+9½¢	2.15+7½¢	2.15+7½¢	2.25+7½¢
Birmingham	1.85	1.95	3.95	3.15	3.45+10¢mn	3.18	3.27	3.65	3.40+10¢Rp	1.90	2.10	2.35
Boston	2.65+10¢	2.55+10¢	3.80+30¢	3.45+10¢	4.02+20¢	3.90+10¢	3.65+45¢	3.90+25¢	3.20+10¢	2.70+8¢	2.70+8¢	2.70+8¢
Chicago	3.02½+7½¢	3.02½+7½¢	4.07½+7½¢	3.75+20¢o	4.15+10¢n	3.75+5¢	3.95+23¢	4.10	3.95+23¢	2.48+15¢	.....	.....
Cincinnati	2.75	2.65	3.90+10¢	3.57½	3.80+10¢	3.475/3.70	3.725+.04	3.92+4¢	3.95+9½¢	2.55+2½¢	2.65+2½¢	2.75+6½¢
Cleveland	3.25b	3.165b	3.965+10¢b	3.99b	3.89+10¢b	3.99b	3.99a	4.05b	3.80+19¢b	2.82+15¢a	2.82+15¢a	2.82+15¢a
Dallas	1.80	1.80	3.95	3.35b	3.425+7½¢	3.375	3.625+13¢	3.50+7½¢	3.575+8½¢	1.80/2.625	1.80/2.625	1.80/2.625
Denver	2.25	2.25	3.90	3.50	3.41+7½¢	3.15	3.625+12¢	3.75+14¢	3.80+10¢	2.30	2.50	2.65
Detroit	2.80+42¢	2.80+42¢	3.90+30¢	3.55+42¢	3.90+22½¢	3.55+36¢	3.66+34¢	3.90+44	3.835+17½¢	2.95	2.95	2.95
Kansas City	2.455	2.505	3.95	3.50	3.55	3.445	3.75	3.75+28¢	3.60+9½¢	2.43	2.43	2.505
Los Angeles	2.88+10¢	2.88+10¢	4.00+15¢	3.60+20¢	4.07½+23½¢	3.61+15¢	4.125+42½¢	4.40+44	4.10+81¢	3.15½+10¢	3.15½+10¢	3.345+10¢
Minneapolis	2.70	2.70	3.875	3.45	3.62	3.45	3.40+33¢	3.55+39¢	3.62+20¢	2.70	2.70d	2.85
New Orleans	1.80e	1.80e	3.575+7½¢d	3.10d	3.40+7½¢d	3.225+7½¢d	3.12+8¢jk	3.475+7½¢	3.50+15¢dl	2.575+7½¢d	2.575+7½¢d	2.575+7½¢d
New York	3.30+26¢c	3.30+26¢c	4.30+44¢	4.40+35¢k	4.60+47¢j	4.65+37¢	4.50+62¢	4.90+1.272R	4.50+54¢	2.35+22½¢	3.40+28½¢	3.40+28½¢
Philadelphia	2.50	2.40+10¢	4.10+17¢	3.785	4.30+23¢	3.935/4.215	4.15+16¢	4.37½+16¢	4.10+31½¢		2.57+15½¢	
Pittsburgh	2.575+20¢	2.425+20¢	4.30+20¢	3.775+20¢	4.15+20¢	3.73+20¢	3.95+20¢	4.35+32½¢	4.00+20¢	2.37+20¢	2.51+20¢	2.61+20¢
St. Louis	2.775+10¢	2.775+10¢	4.05+32½¢	3.725+10¢c	3.75+7½¢	3.825	3.90+17½¢	4.11+31¢	4.07½+20¢	2.80+12½¢	2.80+12½¢	2.80+12½¢
San Francisco	2.865+10¢	2.865+10¢	4.25+42½¢	3.55+30½¢	4.075+22½¢	3.405+10¢	3.79+63¢	4.22+29¢	4.14+54¢	2.81+20¢	2.75+20	2.89+20¢
Seattle	2.85+10¢	2.85+10¢	4.15+10¢	3.32+10¢	3.89+10¢	3.59+20¢	3.57+30¢	3.65+26¢	3.81+24¢	3.15+20¢	3.15+20¢	3.35+20¢
Montreal	1.60+4¢g	1.60+4¢g	2.40+5¢g	2.20+5¢g	2.45+5¢	2.30+5¢	2.35+5¢	2.35+5¢	2.47+5¢n	1.60+4¢	1.60+4¢	1.60+4¢
Toronto	1.80+7¢	1.80+7¢	3.00+12¢	2.80+12¢	2.85+11¢	3.05+12¢	3.00+20¢	3.30+13¢	3.20+13¢	1.85+13¢	1.85+7¢	1.85+7¢

	Tractor Operators—Incl. bulldozers: 34-49 hp	70-100 hp	100 & over	Tractor scraper: 15-18 cy	Power cranes & shovels: ½ cy	¾ cy	Motor grader oper	Air comp oper	Air tool oper
Atlanta	$2.925	$3.00	$3.00	$2.85	$3.375	$3.525	$2.85	$2.775	$1.925
Baltimore	3.65+10¢	3.65+10¢	3.65+10¢	3.65+10¢	4.05+10¢	4.05+10¢	3.65+10¢	3.25+10¢	2.25+7½¢
Birmingham	2.79	2.79	2.79	2.93	2.93	2.93	2.89	2.77	2.05
Boston	3.52½+10¢	3.52½+10¢	3.52½+10¢	3.52½+10¢	3.90+10¢	3.90+10¢	3.52½+10¢	3.45+10¢	2.80+7¢
Chicago	3.50+5¢	3.65+5¢	3.30+5¢	3.30+5¢	3.80+5¢R	3.80+5¢R	3.50+5¢	3.40+5¢	3.70+5¢
Cincinnati	3.475+10¢	3.475+10¢	3.475+10¢	3.475+10¢	3.475+10¢	3.70+10¢	3.70+10¢	3.70+10¢	3.70+10¢
Cleveland	3.74b	3.74b	3.74b	3.74b	3.99b	3.99b	3.74b	3.615b	3.615b
Dallas	1.80/2.625	1.80/2.625	1.80/2.625	1.80/2.625	3.10h	3.10h	1.80/2.625	1.95	1.95
Denver	2.40	3.00	3.00	3.00	3.15	3.15	3.00	3.00	2.53
Detroit	3.55+36¢	3.55+36¢	3.55+36¢	3.55+36¢	3.55+36¢	3.55+36¢	3.55+36¢	3.275+15¢	2.93+34¢
Kansas City	2.75	3.30	3.30	3.20	3.445	3.445	3.20	3.20	2.55
Los Angeles	3.91+15¢	3.91+15¢	3.91+15¢	4.01+15¢	4.01+15¢	4.01+15¢	4.01+15¢	3.13+15¢	3.09+10¢
Minneapolis	3.08	3.30	.....	3.30	3.52	3.78	3.08	2.97	2.85
New Orleans	3.225+7½¢d	3.225+7½¢d	3.225+7½¢d	3.225+7½¢d	3.225+7½¢d	3.225+7½¢d	3.225+7½¢d	2.575+7½¢d	1.90e
New York	4.025+32¢	4.025+32¢	4.025+32¢	4.15+33¢	4.90+39¢	4.90+39¢k	4.15+33¢	4.15+33¢	4.15+21¢
Philadelphia	R* 3.52+10	3.665+10	3.665+10	3.79+10	4.215+10	4.215+10	3.765+10	3.41+10	2.35
Pittsburgh	3.44+10¢	3.44+10¢	3.44+10¢	3.44+10¢	3.64+10¢	3.64+10¢	3.64+10¢	3.15+10¢	2.30+20¢
St. Louis	3.825	3.825	3.825	3.825	3.825	3.825	3.825	3.275	3.275
San Francisco	3.70+20¢	3.70+20¢	3.70+20¢	3.70+20¢	3.85+20¢	3.85+20¢	3.75+20¢	3.10+20¢	2.955+20¢
Seattle	3.56+20¢	3.56+20¢	3.56+20¢	3.56+20¢	3.93+20¢	3.93+20¢	3.65+20¢	3.29+20¢	3.05+10¢
Montreal	q 1.80+4¢	2.03+4¢	2.03+4¢	2.03+4¢	2.30+5¢	2.30+5¢	2.03+4¢	1.90+4¢	1.90+4¢
Toronto	2.30+10¢	2.40+10¢	2.40+10¢	2.40+10¢	2.90+12¢	3.05+12¢	2.70+11¢	2.40+10¢	2.40+10¢

ENR Skilled Average (Bricklayers, Carpenters, Iron Workers): $3.897, ENR Common Average $2.61

Description of fringe benefits last appeared Feb. 26; will next appear in Sept. 17 Cost Issue.

DEFERRED WAGE INCREASES UNDER PRESENT CONTRACTS: 1960: a May 1; 10¢ b May 1; 12¢ k May 1; 8¢ l May 1; 10¢ m Jan. 1; 15¢ n Jul. 1; 5¢ o Jun. 30; 22½¢ s Apr. 1; 15¢. **1959:** c Dec. 1; 10¢ d Nov. 1; 10¢ e Nov. 1; 5¢ f Oct. 1; 20¢ g Sept. 1; 11¢ h Aug. 1; 7½¢ j Nov. 1; 7½¢ p Sept. 1; 11¢ q Oct. 1; 5¢
* Philadelphia wage rates revised, watch analysis

BUILDING BOARD & LATH AND INSULATION—DELIVERED TRUCKLOAD LOTS

	Gypsum Plaster Board: tapered edge per Msq ft ½"	⅝"	Gypsum Board Lath: plain or perf per Msq ft ⅜" x 16" x 48"	Gypsum Sheathing: tongue & groove per Msq ft ½" x 2' x 8'	Fiber Board Sheathing: asph impreg & coat per Msq ft ½" sq ed	¾" T&G	Fiber Board Insulation: sq edge, paint per Msq ft ½"	Mineral Wool Insulation: loose, per 40-lb bag a	3" batts per M sf	Glass Fiber Insulation: loose, per 40-lb bag a	3" batts per M sf	Aluminum Foil: 60¢ Kraft 1 side foil per roll of 250 s. f.	Expansible Blanket 2 layers foil per Msq ft
Atlanta	$55.00F	$55.00F	$42.50F	$68.00F	$72.00F	$127.00F	$75.00F	1.59z	$70.00F	$2.00	$80.00F	$4.77qi	
Baltimore	51.70	45.55	34.25	55.35	65.00	108.50	69.00	1.30F	66.50F	1.50F	45.00F	4.00F	$33.50F
Birmingham	68.90H	57.00H	47.77H	75.00H	67.50H	140.50H	83.50H	1.40	70.00	1.60	75.00	3.77gG	.....
Boston	60.00mH	50.00mH	36.00mH	60.00mH	65.00H	120.00H	79.00knH	1.45kH	75.00H	.....	75.00H	5.30zHS	53.50gH
Chicago	67.00	54.00	45.00	63.00	87.00	123.00	87.00	1.85	80.00	.....	63/65l	5.25j	.....
Cincinnati	48.00wH	42.85wH	32.05wH	51.16wH	71.00wH	125.00wH	73.50wH	1.20wH	62.50wH	1.20wH	74.00wH	3.28jwJ	50.00wJ
Cleveland	62.00CF	56.50CF	41.50CF	65.00CF	80.00CF	139.00CF	80.00CF	1.35/1.50H	72.00H	.....	63.75	17.50ioJ	55.00J
Dallas	55.00	52.50	42.50	60.00	68.75	118.00	68.75	2.00	65.60	1.45	70.67	5.00gAG	45.00
Denver	66.50H	58.50H	45.00H	68.75H	84.00H	130.00H	84.50	1.50b	65.00wb	1.75b	65.00s	5.25	48.65
Detroit	66.00K	55.00K	43.00K	65.00K	62.50DK	103.50DK	62.50DK	1.30b	50.00	1.95b	88.00	.....	.....
Kansas City	72.00H	62.00H	45.00H	.....	75.00H	122.00H	80.00H	1.40H	75.00H	1.60H	75.00H	3.60d	53.98
Los Angeles	Q 66.00F	60.50F	0.33zF	64.50F	75.00F	125.00F	80.00F	76.00BeF	85.00F	1.35s	64.00	4.40g	7.45V
Minneapolis	F 75.00F	65.00F	0.41xL	75.00F	95.00F	130.00F	78.00F	2.25wF	80.00F	2.10F	80.00F	4.25F	.....
Montreal	58.00M	49.30M	37/41.50M	53.00M	64.75M	.....	58.50M	1.50M	66.00M	1.50M	66.00M	9.00qM	56.00M
New Orleans	57.00H	52.00H	45.00H	60.00H	67.00H	140.00H	80.00H	2.00L	70.00*	.....	.....	.....	52.12U
New York	65.00H	55.00H	42.50H	65.50H	78.00	124.00	78.00	1.55b	68.50k	.....	.....	4.38iH	40.00eH
Philadelphia	HR* 52.50	46.00	36.00	52.00	70.00	105.00	70.00	1.05	50.00	1.40	50.00	5.25	60.00
Pittsburgh	74.00K	65.00K	40.00K	63.00K	62.50K	102.50K	57.50K	1.05xK	55.00K	1.05xK	55.00K	3.80igK	38.50K
St. Louis	65.00HO	55.00HO	40.00HO	70.00HO	76.00HO	120.00HO	80.00HO	1.35yHO	85.00HO	2.09PHO	74.00HO	4.50iqHO	.....
San Francisco	57.00F	48.00F	0.35uF	58.00F	68.00F	109.00F	67.00F	1.75F	66.50F	1.75F	66.50F	5.10	60.00F
Seattle	66.50K	57.65K	51.05K	65.00K	74.50K	125.00K	73.50K	1.15wK	58.00K	1.90*pK	51.00*iKh	4.25K	46.50EK
Toronto	58.00	50.00	38.00L	64.50	61.50F	.....	69.00F	1.65	65.50	.....	65.50	14.75o	46.00

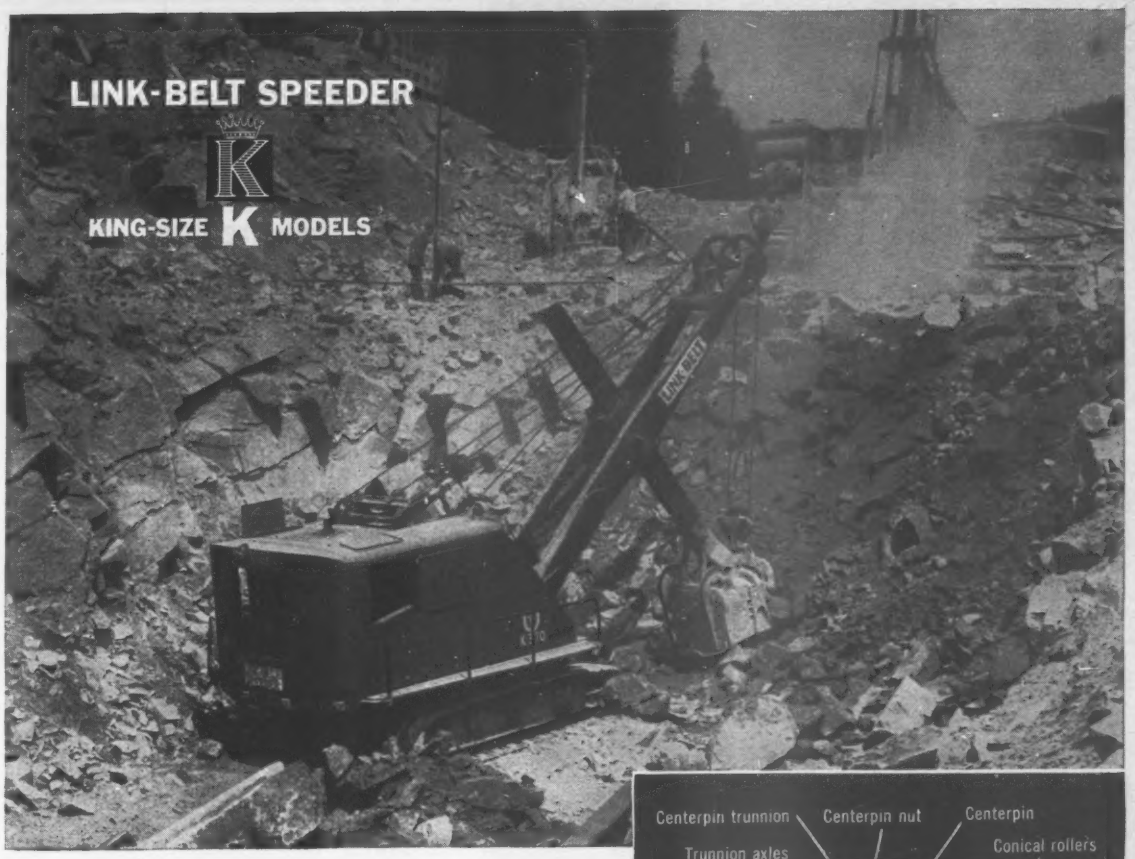
a* F.o.b. warehouse. a Semi thick. b 30# bag. c 3 layers of foil: $54.50. d 40# kraft paper, 5 Msf, 100/500 rolls. e 20# sq ft bag. 4" thick. f Full trailer loads. g 80# kraft paper backing 400 rolls or over. h LCL. i 40#. j 80#. k 2-in. l 2". m 8 to 10 ton quantities. n Distributor's siding. o Per Msf roll. p 32# bag. q 500 sf. s 35# bag. t 22# bag u Flame proof $75. v 5000 sf quantity. w F.o.b. city. x Sq. yd. y 30# bag. z Spun rock wool. A 650 sf. B ton. C F.o.b. plant, freight allowed. D Cl.. E 10 Msf. F less 2% disc, 10th. G ½ of 1%, 10 days. H 2% disc, 10 days. I 1% disc, 10 days. K less 2% for cash. L 5% disc, 10th mo. M fed. tax incl. N 1% disc, 10 days. O add 2% sales tax. P 50 lb. bags, Q add 4% sales tax. R revised. S 45 lb. T less 2% 30 days. U lots of 2608 sq. ft. V 250 sf roll. * Philadelphia prices revised, watch for analysis.

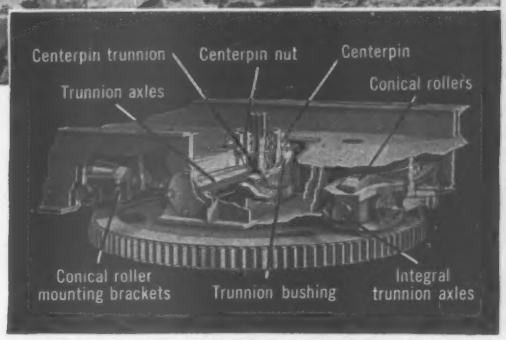
MEXICO CITY WAGES & PRICES

WAGES, av per week, 8 hr day (pesos)		Aug '59	Sept '59
Common labor,	building (peons)	87.50	87.50
	heavy const (peons)	87.50	87.50
Skilled labor,	carpenters 1 cl	175.00	175.00
	bricklayers 1 cl	210.00	210.00
	struct. ironworkers	280.00	280.00

MATERIALS PRICES, F.o.b.City(pesos)		Aug '59	Sept '59
Struct. steel shapes, fob Monterey			
I-beams, 3 x 3 x 4"	per metric ton	2400.00	2400.00
Reinf. steel, corrugated rods, per ton			
⅜"-½" x 11 meters		1900.00	1900.00
¾"-1" x 11 meters		1900.00	1900.00

	Aug '59	Sept '59
Gravel, truckload, per cu meter		
Blue gravel	25.00	25.00
Cement, std. port. (Tolteca)	2.40	2.40
Lumber, 2"x4" 1st class pine..per M sq. ft.	2200.00	2200.00
2"x4" 2nd class pine..per M sq. ft.	1900.00	1900.00





Exclusive centerpin trunnion and oscillating roller design eliminates concentrated centerpin loadings. Self-aligning centerpin trunnion distributes load evenly. Oscillating Conical rollers assure full-face contact with the roller path.

Put the shock in the rock...

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TOUGH CUTS OR BRUTE LIFTS, BURLY 1½ TO 3-YD. K-MODELS OUT-MANEUVER SMALLER RIGS... OUT-PRODUCE LARGER MACHINES!

Always on top of the heavyweight jobs! Your operator in the cab of a Link-Belt Speeder King-size K-model *knows* he need *never* baby this machine!

He feels the smooth surge of greater *usable* hp through hefty, extra-size shafts, gears and clutches. He socks the dipper in — rugged K-model structural members soak up the shock.

And K-models deliver these output-boosting advantages: Speed-o-Matic, the *true* power hydraulic controls . . . fast, effortless power hydraulic steer . . . *plus* bonus usable hp.

If you'd like more facts demonstrating how King-size K-models (1½ to 3-yd. capacity) outstrip the field, see your distributor or write Link-Belt Speeder Corporation, Cedar Rapids, Iowa.

15,222-A

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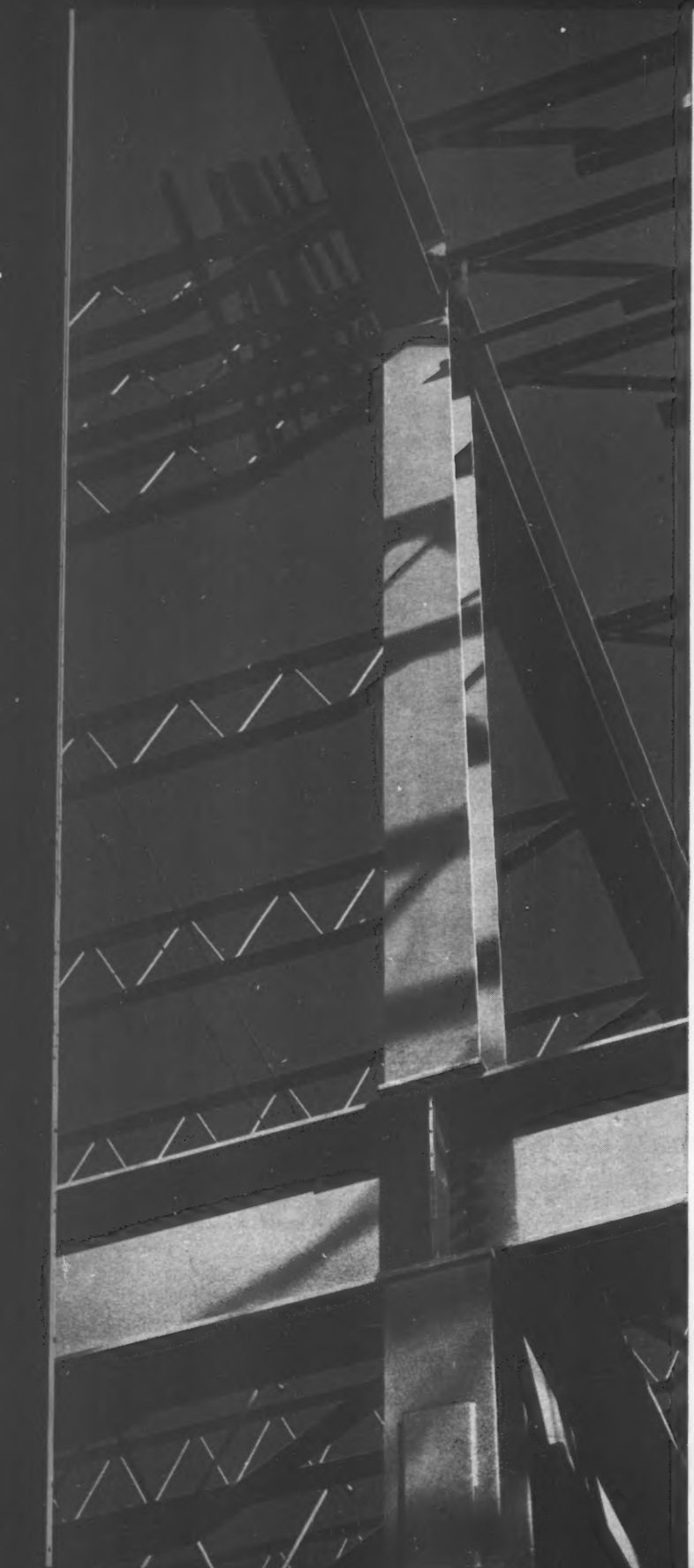

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Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, MARIE MORAVSIK, ELAINE CHOMYAK, ELIZABETH WERRA, ELEANOR QUERET, Reports, J. H. WEBBER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

▲† **New Hampshire**—BA 10/29—U. S. Eng., 424 Trapelo Rd., Waltham, Mass., Everett Dam-Hopkinton Dam Canal No. 2 and relocation Winslow Rd., Flood Control Proj., Contoocook and Piscataquog Rivers, Hopkinton, Dumbarton and Weare Counties, ENG-19-016-60-1. $10,000,0000-$15,000,000. CD 8/20.

BUILDINGS—BA

▲ **Mass., Boston** — SCHOOL — BA 10/14 — City, Dpt. School Bldgs., 26 Norman St., Memorial High School alterations, addns., Warren, Deckard and Townsend Sts., Roxbury. $1,000,000. Plans deposit $100. Thomas F. McDonough, 140 Boylston St., archt. CD 5/11, under LB.

▲ **Mass., Southwick**—SCHOOL—BA 10/14—Town, Supt. Schools, high school addn. $1,295,000. Alderman & MacNeish, 594 Riverdale St., West Springfield, Mass., arcnts.-engrs. CD 10/15/58.

▲ **Conn., Milford** — SCHOOL — BA 10/22 — Town, Bd. Educ., 38 W. River St., West High School, Devon Park, Devon. $1,306,950. Jesse J. Hamblin, 1188 Main St., Bridgeport, archt. CD 10/17.

▲† **Mass., Bedford**—HOSPITAL—BA 11/17—Veterans Admin., Munitions Bldg., Wash., D. C., veterans hospital, Bldgs. 5, 6 and 10. $2,000,000. James H. Ritchie & Assoc., 135 Clarendon St., Boston, archts. CD 1/28.

HEAVY CONSTRUCTION—LB & CA

▲ **VERMONT**—State Hy. Dpt., State Office Bldg., Montpelier,

The Lane Constr. Corp., 565 E. Main St., Meriden, Conn., CA $1,570,599, grade, drain, sub-base with c. conc. surf. course, incl. three 3 span composite WF beam bridges, one 5 span composite WF beam bridge, Town of Putney, the Brattleboro-Bellows Falls Rd., Int. Rte. 91 beginning approx. 0.277 mi. northerly of Dummerston-Putney Town line and exten. northerly 1.702 mi. Proj. 1-91-1 (1) Contr. 1, Putney. Bids Sept. 11. CD 9/17, under LB.

▲ **Joseph Rugo, Inc.**, 115 Homes Ave., Dorchester, Mass., CA $3,758,000, est. $3,800,000, Contr. MPA L-58-2-2, hangar, Logan Airport, EAST BOSTON, MASS. Commonwealth of Mass., Port Auth., 14 Court Square, Boston, Mass. Eastern Airlines, Inc., 250 Boylston St., Boston, Mass., lessee. CD 8/4, under LB.

BUILDINGS—LB & CA

▲† **Consolidated Constructors, Inc.**, 807 Congress St., Portland, Me., LB $4,443,305, est. $2,157,000, VLF HELIX HOUSES, Naval Radio Station, Washington Co., NBy 22964, Spec. 22964/58, JONESPORT, ME. First Naval Dist., 495 Summer St., Boston, Mass. Bids Sept. 17. CD 9/2.

▲ **Raytheon Mfg. Co.**, Foundry Ave., Waltham, Mass., rejected bids Sept. 11, MANUFACTURING PLANT, Lisbon Rd., LEWISTON, ME. $2,000,000. Will re-advertise. CD 8/26.

▲ **Schultz & Co.**, 65 Winchell Dr., Kensington, Conn., Owner Builds, $1,570,000, 100 HOUSES, "Maple Manor", York Rd., KENSINGTON, CONN.

Alan E. Hanbury, Inc., Forest Drive, Newington, Conn., Owner Builds, $840,000, 28 HOUSES, "Beechwood", Brookside Rd., NEWINGTON, CONN.

▲ **Wigton Abbott Corp.**, 1225 South Ave., Plainfield, N. J., CA Est. $6,000,000, design and construct MANUFACTURING, ENGINEER and RESEARCH CENTER, Connecticut Turnpike and N. Y., N. H. & H. R. R., NORWALK, CONN. United Aircraft Corp., Norden Div., 400 Main St., East Hartford, Conn. CD 4/21.

Garry Building Corp., Crossroads Plaza, West Hartford, Conn., Owner Builds, $840,000, 84 HOUSES, "Bel Aire", WINDSOR LOCKS, CONN. CD 9/3.

MIDDLE ATLANTIC

BUILDINGS—BA

▲ **Md., Towson** — SCHOOL — BA 10/13 — Baltimore County Bd. Educ., Aigburth Rd., Zone 4, brick, block, concrete, steel Security Senior High School, Woodlawn, $4,000,000. Plans deposit $50. Smith & Veale, 2127 N. Charles Ct., Baltimore, Zone 18, archts. Van R. P. Saxe, 1701 St. Paul St., Baltimore, Zone 2, structural engr. Egli & Gompf, 1003 N. Calvert St., Baltimore, Zone 2, mechanical engrs. CD 1/20.

▲ **N. Y., Bayside**—SCHOOL—BA 10/15—Bd. Educ. of City of New York, Bureau Constr., 42-15 Crescent St., Long Island City, Zone 1, general contract, plumbing and drainage, heating and ventilating, electrical work and lighting fixtures Public School 203, Springfield Blvd. between 51st and 56 Avenues, Queens Boro. Spec. Nos. 22, 23, 24 and 25 of 1959. $2,011,000. Plans deposit $25 general, $10 each, mechanical trades. CD 2/28/55.

▲ **N. Y., New York**—SCHOOL—BA 10/15—Bd. Educ. of City of New York, Bureau Constr., 42-15 Crescent St., Long Island City, Zone 1, general contract, plumbing and drainage, heating and ventilating, electrical work and lighting fixtures Public School 1, East 152nd St., west of Courtlandt Ave., Bronx Boro. Spec. Nos. 27–28, 29 and 30 of 1959. $2,256,000. Plans deposit $25 general, $10 each for mechanical trades.

▲ **N. Y., New York**—SCHOOL—BA 10/15—Bd. Educ. of City of New York, Bureau Constr., 42-15 Crescent St., Long Island City, Zone 1, general contract, plumbing and drainage, heating and ventilating, electrical work and lighting fixtures Public School 145, Amsterdam Ave. between West 104th and 105th Sts., Manhattan Boro, Spec. Nos. 122, 123, 124, 125 and 126 of 1958. $2,134,000. Plans deposit 25 general, $10 each mechanical trades. CD 3/31/58.

▲ **N. Y., New York**—SCHOOL—BA 10/15—Bd. Educ. of City of New York, Bureau Constr., 42-15 Crescent St., Long Island City, Zone 1, general contract, plumbing and drainage, heating and ventilating, electrical work and lighting fixtures Public School 155, East 117th St. between 1st and 2nd Aves., Manhattan Boro. Spec. Nos. 53, 54, 55 and 56 of 1958. $2,286,000. Plans deposit $25 general, $8 each, mechanical trades. CD 3/31/58.

BUILDINGS—SLC

▲ **N. Y., Tarrytown**—INN—Hilton Corp., 401 Seventh Ave., New York, Zone 1, soon lets contract, 200 room Hilton Inn on 10-acre, Broadway and Thruway, Exit No. 9. $2,000,000. William B. Tabler, 401 Seventh Ave., New York, N. Y., archt. CD 9/3.

HEAVY CONSTRUCTION—LB & CA

▲ **Ernest Renda Contrg. Co.**, R.D. 2, Bound Brook, N. J., LB $1,272,672, Contr. 5, sanitary sewerage sys., KING OF PRUSSIA, PA. Upper Merion Twp. Auth., King of Prussia, Pa. Bids Sept. 1. CD 8/10; **McClain Constr. Co., Inc.**, 200 S. 13th St., Phila., Pa., LB $899,900, Contr. 1, sewage treatment plant. (King of Prussia, Pa.).

Schurman Constr. Co., 75 W. 3rd Ave. W., Huntington, W. Va., LB $867,495, general constr. Contr. No. 1, sewage treatment plant, ST. MARYS, PA. Municipal Auth., Borough of St. Marys, St. Marys, Pa. Bids Aug. 31. CD 7/31.

BUILDINGS—LB & CA

Morris Weintraub, c/o Park Towers, 16 Court St., Brooklyn 2, N. Y., Owner Builds, $800,000, 12 story APARTMENT, 370 Ocean Parkway, BROOKLYN, N. Y.

Samuel Paul & Seymour Jarmul, 89-51 164 St., Jamaica, N. Y., archts. CD 5/8.

▲ **Hathaway Properties, Inc.**, 565 Fifth Ave., New York 17, N. Y., Owner Builds, $1,250,000, 9 story APARTMENT, 92-96 Fifth Ave. at West 15th St., NEW YORK, N. Y. Leo Stillman, 332 East 149th St., New York 51, N. Y.; archts. CD 6/15.

▲ **Saul Jarcho & Samuel J. Landau**, 745 Fifth Ave., New York 22, N. Y., Owner Builds, $2,000,000, 18 story OFFICE, 770 Lexington Ave. and 131-39 East 60th St. northwest corner, NEW YORK, N. Y. Schuman & Lichtenstein, 360 Lexington Ave., New York 17, N. Y., archts. CD 5/13.

▲ **440 E. 62nd St. Corp.**, 691 Gerard Ave., New York 51, N. Y., Owner Builds, $2,000,000, 19 story APARTMENT, 440 East 62nd St. and 1143-7 York Ave., NEW YORK, N. Y. Leo Stillman, 332 East 149th St., New York 51, N. Y., archt. CD 9/1.

▲ **Caristo Constr. Corp.**, 26 Court St., Brooklyn 2, N. Y., LB $1,764,000 (7 bidders), general contract PUBLIC SCHOOL 128, Audubon Ave. between 168th and 169th Sts., Manhattan Boro, NEW YORK, N. Y. Supt. Design, Constr. & Physical Plant at office Bureau Constr., Bd. Educ., 4th Fl., 42-15 Crescent St., Long Island City 1, N. Y. Bids Sept. 16. CD 9/10.

Irving Friedman, 11 East 78th St., New York 21, N. Y., Owner Builds, $825,000, 12 story APARTMENT, 51-61 East 87th St., NEW YORK, N. Y. Schuman & Lichtenstein, 360 Lexington Ave., New York 17, N. Y., archts. CD 5/22.

Shapco Engr. & Constr. Corp., 650 Whittier St., New York 59, N. Y., Owner Builds, $850,000, 14 story APARTMENT, 316-322 East 58th St., NEW YORK, N. Y. Schuman & Lichtenstein, 360 Lexington Ave., New York 17, N. Y., archts. CD 7/8.

▲ **Lawrence J. Rice, Inc.**, 61-40 Maurice Ave., Maspeth, N. Y., CA Est. $2,500,000, Mercy HIGH SCHOOL, RIVERHEAD, N. Y. Diocesan Bldg. Office, Clinton St., Box 120, Rockville Centre, N. Y. Bids Sept. 10. CD 8/26.

▲ **Stoffiet & Tillotston**, 2043 Eastburn Ave., Phila., Pa. CA $1,218,700, general constr. 102 units Champlost Low Cost HOUSING, 20th St. and Champlost Ave., PHILA., PA. Phila. Housing Auth., 42 S. 15th St., Phila., Pa. CD 8/19, under LB.

▲ **Joseph F. Hughes & Co.**, 5 East Franklin St., Baltimore, Md., LB $2,790,000 (10 bidders), Overlea SENIOR HIGH SCHOOL, Overlea, TOWSON, MD. Baltimore County Bd. Educ., Aigburth Rd., Towson 4, Md. Bids Sept. 17. CD 9/9.

▲ **Rupert Constr. Co.**, 3400 Lancaster Ave., Wilmington, Del., CA $2,355,970, Gunning Bedford JUNIOR-SENIOR HIGH SCHOOL, on former Clarence A. Everett farm midway between Delaware City and St. Georges, DELAWARE CITY, DEL. Gunning Bedford School Dist., Delaware City, Del. Bids Sept. 2. CD 9/9, under LB.

Integrity Finance Corp., 1807 W. 4 St., Wilmington, Del., rejected bids OFFICE, 1800 W. 4 St., WILMINGTON, DEL. LB $803,746, est. $620,784. Will re-advertise. CD 7/20, under LB.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000, other public works $88,000, industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of Interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	Middle West
Middle Atlantic	Mississippi to Rockies
South	Far West

PROPOSED WORK

Water Supply	Public Buildings
Sewers, Waste Disposal	Mass Housing
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily.

SOUTH

HEAVY CONSTRUCTION—BA

▲ **Ky., Louisville**—WING ADDN.—BA 10/14—Louisville-Jefferson County Air Bd., Lee Terminal Standiford Field, constr. Lee Terminal Standiford Field wing addn. (Phase 1), Over $1,500,000. Plans deposit $100. Arrasmith & Tyler, 501 Park Ave., archts. CD 7/23, under LB.

▲† **Florida**—BA 11/3—U. S. Eng., 575 Riverside Ave., Jacksonville, Canal 41, Harney Pond Canal Section 2, Central and Southern Florida Flood Control Project, CIVENG-08-123-60-11P. CD 9/17.

HEAVY CONSTRUCTION—LB & CA

▲† **General Electric Co.**, 1 River Rd., Schenectady, N. Y., CA $5,294,309, four hydro-electric turbine generators for Barkley Dam, Eddyville. CIVENG-40-058-59-9, KENTUCKY and TENNESSEE. U. S. Eng., 306 Federal Office Bldg., Nashville, Tenn. Bids Mar. 26, awarded Sept. 15. CD 3/31, under LB.

BUILDINGS—LB & CA

▲ **Daniel Constr. Co.**, 429 Main St., Box 2286, Greenville, S. C., CA Est. total cost $50,000,000. GLASS FIBER PLANT, SHELBY, N. C. Pittsburgh Plate Glass Co., 420 Fort Duquesne St., Pittsburgh, Pa. Lockwood Greene, Engineers Inc., Montgomery Bldg., Spartanburg, S. C., engrs. CD 2/4/57.

▲† **Roberson Constr. Co.**, 801 Pepper St., Columbia, S. C., CA $1,595,921, constr. and installation four 1,300,000 gal. capacity WASTE STORAGE TANKS, Savannah River Plant for Atomic Energy Comm., AIKEN, S. C. E. I. duPont de Nemours & Co., Savannah River Plant, P. O. Box 117, Augusta, Ga. Bids July 27. CD 6/5.

Giller & Fryd Constr. Corp., 523 Michigan Ave., Miami Beach, Fla., CA $879,700, Honey Hill JUNIOR HIGH SCHOOL, NW 195 St. and 12 Ave., MIAMI, FLA. Dade Co. Bd. P. Instruction, Admin. Bldg., 275 N.W. 2 St., Miami, Fla. Bids Sept. 16. CD 9/1.

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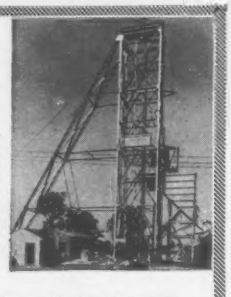

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▲ **Switzer Willing Constr. Co.,** Trafton Ave., Lexington, Ky. Bids Aug. 15. CD 8/20, under LB.

Park, Proj. KY-21-1; Riverside Homes, Proj. Ky. 21-2, CYNTHIANA, KY. Cynthiana Housing Comn., Cynthiana, Ky., CA $1,034,166, Low-Rent HOUSING, Terrace

▲ **Holiday Inns of America, Inc.,** 3728 Lamar Ave., Memphis, Tenn., Own Forces, **$1,250,000,** 150-175 units MOTEL, Market St., CHATTANOOGA, TENN. William Bond, 4985 Summar St., Memphis, Tenn., archt. Awarded Sept. 10. CD 11/25/55.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲ **Ill., Chicago**—RUNWAY EXTENSION—BA 10/9—City, City Hall, Contr. B-7, second extension to Airport Runway 4R-32 and taxiways, incl. culverts, storm sewers, sub-grades, concrete, bit. paving, runway lighting, parking area. $3,000,000. CD 4/3.

BUILDINGS—BA

▲ **Ind., Gary**—SCHOOL—BA 10/13—School City of Gary, 10th Pl. and Virginia, 2 story, 86,000 sq. ft., rein.-con. Norton Park Elementary School, $1,300,000. Plans deposit $30. Fredrick W. Collins, 400 W. 5th Ave., archt. CD 4/10.

BUILDINGS—SLC

▲ **Ind., Fort Wayne**—BANK AND PARKING GARAGE—First Presbyterian Church, 300 W. Wayne St., soon lets contract bank and parking garage, Clinton and Washington Sts. $1,250,000. Mox Pohlmeyer & Assocs., 262 Central Bldg., archts. CD 9/4.

HEAVY CONSTRUCTION—LB & CA

▲ **Jechura Bros., Inc.,** 5700 Telegraph Rd., Toledo, O. LB **$1,559,626,** est. $1,610,938 (9 bidders), North Toledo storm sewer to serve 460 acre area bounded by E. Manhattan Blvd., Chestnut and Mulberry Sts. and Stickney Ave., E. Delaware, Franklin, Cherry and Page Sts., TOLEDO, O. City, City Hall, Toledo, O. Bids Sept. 15. CD 1/29.

▲ **C & C Constr. Co.,** 4625 Industrial Rd., Fort Wayne, Ind., LB **$2,373,243,** (12 bidders), sewage treatment plant addn., FORT WAYNE, IND. Bd. P. Wks., City Hall, Fort Wayne, Ind. Bids Sept. 15. CD 8/18.

Mayfair Constr. Co., 5660 N. Jersey Ave., Chicago, Ill., LB **$962,559,** (11 bidders), Harrison St. Bridge, South Rte. superhighway, 2 steel, concrete bridges, 80.68-59-7, CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago 2, Ill., Bids Sept. 10. CD 8/26.

Quad City Constr. Co., 644 25 Ave., Rock Island, Ill., CA **$828,850,** Div. B, 24-to-72-in. relief sewers, 8 in. sanitary sewers, QUINCY, ILL. City, City Hall, Quincy, Ill. Bids Aug. 24. CD 9/9, under LB.

▲ **MICHIGAN**—State Hy. Dpt., Mason Bldg., Lansing, Bids opened 9/16,

Mich.—**Louis Garavaglia,** 24240 Mound Rd., Warren, Mich., LB **$2,949,862,** 6.2 mi. expressway and 5 structures from existing US 23 northerly to M-47, Bay and Saginaw Counties;

Mich.—**L. A. Davidson,** 213 E. St. Joseph St., Lansing, Mich., LB **$1,786,569,** 2.9 mi. roadway and 3 structures M 47 north to Bay City-Midland Expressway, Bay Co.;

Mich.—**Holloway Constr. Co.,** 29350 Joy Rd., Livonia, Mich., LB **$1,317,112,** 4.3 mi. expressway and 206 ft. interchange from Isabella-Gratiot County line north to north of Blanchard Rd., Isabella Co.;

Mich.—**Canonie Constr. Co.,** South Haven, Mich., LB **$641,747,** 3.9 mi. southbound lane relocated M 78 from Graham Lake northeasterly to Detroit-Chicago expressway, south Battle Creek, Calhoun Co.;

Mich.—**W. N. Knapp,** Box 593, Monroe, Mich. and **W. F. McNally,** 5825 Dixie Hy., Bridgeport, Mich., LB **$692,514,** grading, drainage structures 1.3 mi. M 46 west of Saginaw easterly to Tower Line Rd. incl. 213 ft. grade separation to carry M 46 over US 23 expressway, Saginaw Co. CD 9/11.

BUILDINGS—LB & CA

▲ **Knowlton Constr. Co.,** 1133 W. Columbus, Bellefontaine, O., CA **$1,280,100,** general contract Fassett JUNIOR HIGH SCHOOL, on 25 acre site off Starr Ave. near Yarrow Rd., TOLEDO, O. Oregon Local School Dist., 5721 Seaman Rd., Toledo O. Beliman, Gillett & Richards, 1600 Madison Ave., Toledo, O., archts. Bids Sept. 14. CD 8/11.

▲ **Mercury Builders, Inc.,** 761 S. Harlem Ave., Forest Park, Ill., LB **$1,525,971,** general contract HIGH SCHOOL, PALATINE, ILL., Palatine Twp. High School Palatine Ill. Bids Sept. 3. CD 8/28.

▲ **Klug & Smith Co.,** 4425 W. Mitchell St., Milwaukee, Wis., CA **$5,000,000,** design and construct 2 story, 230 x 550 ft., concrete, steel, brick BOTTLEHOUSE addn., MILWAUKEE, WIS. Jos. Schlitz Brewing Co., 255 W. Galena St., Milwaukee, Wis.

▲ **The Hoffman Co., Inc.,** P.O. Box 596, Appleton, Wis., LB **$1,894,000,** HIGH SCHOOL, OSHKOSH, WIS. Bd. Educ., Oshkosh, Wis. Bids Sept. 10. CD 8/11.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

▲ **Neb., Omaha**—BA 10/6—City, City Hall, 19th and Farnam Sts., Storm Sewer No. 2243 (1st of four emergency storm sewers) 49th and Grover St. S.E. to 46th and B Sts., $60,000, CD 9/17. 1st section North Interceptor Sewer exten. from Sharon Dr. to Minnelusa Ave. to 29th and Bridge Sts. $350,000, Kirkland, Michael Assn., 508 S. 19th St., engrs., CD 12/10/58, storm sewer 50th and Valley Sts. to 49th and Grover, storm sewer 72nd and Ohio Sts. to 70th and Grant Sts.; storm sewer line to Little Papio Creek from shopping center area at 72nd and Dodge Sts.; sanitary sewer 51st and Y Sts. to 46th Ave. and O St., sanitary sewer Weber St. between 30th and 34th Sts., sanitary sewer Seward St. between 56th and 58th Sts.; sanitary sewer Spaulding St. between 69th and Military Aves. CD 10/28/52.

▲† **Mont., Great Falls**—WHERRY PROJ.—BA 10/29—Base Procurement Office Bldg., T-1308, Malmstrom Air Force Base, Proj. MLM-130-0, rehabilitation and imprvs. to 400 unit Wherry Proj. and 192 unit Wherry Proj. Malmstrom Air Force Base, IFB 24-604-60-29. Plans deposit $100. CD 3/12/58.

▲† **South Dakota**—BA 11/3—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., furnishing mainpower transformers, near Pierre, Oahe Reservoir Proj., ENG-25-066-60-20. $2,500,000-$3,200,000.

▲† **Wyo., Cheyenne**—OPERATIONAL BASES—BA On Or About 11/4—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., WS-107A-1 Operational Bases, 549-1 through 549-9, incl. 9 missile launching sites, etc., F. E. Warren Air Force Base, Inv. No. ENG-25-066-60-13. CD 1/6/58.

▲† **S. D., Rapid City**—TECHNICAL FACILITIES and STANDARDIZED EQUIPMENT—BA On Or About 11/16—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., WS-107A-2 technical facilities, Base T-2, Incl. one launch complex at each of 3 sites, consisting of (A) three launch stations each with missile silo, equipment terminal, propellant terminal and propellant sys. (B) one guidance facility with two antenna terminals (C) one underground control center (D) one underground powerhouse with electrical generating, heating, and air-conditioning equipment (E) interconnecting tunnels for utilities and personnel (F) utilities, roads and grading, ENG-25-066-60-1; furnishing standardized equipment for WS-107A-2 technical facilities, incl. furnishing under supply contracts standardized equip. to be installed under ENG-25-066-60-1 and under three addni. invitations, separate contracts will be awarded for furnishing the following: (A) propellant loading sys. equipment (B) air compressors (C) air-conditioning and refrigerating equipment (D) pumps (E) electrical generating equipment (F) motor control centers and unit substations (G) alarm sys. equipment, ENG-25-066-60-35, Ellsworth Air Force Base. CD 3/23/59.

BUILDINGS—BA

▲† **N. M., Los Alamos**—CIVILIAN POWER REACTOR, etc.—BA 10/15—Atomic Energy Comm., Los Alamos Area Office, Civilian Power Reactor and Rover Hot Cell facilities, incl. 2 story masonry bldg. with basmt. laboratories, etc. Inv. No. 291-60-3. $2,500,000-$3,000,000. CD 8/4.

BUILDINGS—SLC

▲ **Minn., Golden Valley (P.O. Minneapolis)**—COMMONS, etc., Lutheran Bible Institute of Minneapolis, 1619 Portland Ave., Minneapolis, soon lets contract commons bldg., gym, classrooms, two dormitories, office on Campus, Hy. 55 west of Hy. 100. $1,500,000. Hammel & Green, Inc., 1932 University Ave., St. Paul, archt. CD 9/4.

HEAVY CONSTRUCTION—LB & CA

▲ **KANSAS**—State Hy. Comn., Junction City,

Koss Constr. Co., 510 Iowa-Des Moines Bank Bldg., Des Moines 9, Iowa, CA **$1,463,017,** concrete paving 6.533 mi. SP 70-31 I 70-5(29) 294, Geary Co. Bids Aug. 13. CD 8/19, under LB.

▲ **SOUTH DAKOTA**—State Dpt. Hys., Pierre, Bids opened 9/17,

S. D.—**Western Contg. Corp.,** 400 Benson Bldg., Sioux City, Iowa, LB **$722,945,** (6 bidders), grading, etc. 12.322 mi. Proj. I 29-1 (7) 15, Union Co.;

S. D.—**Sweetman Constr. Co.,** 100 S. Dakota St., Sioux Falls, S. D., LB **$1,218,638,** (8 bidders), grading, c. conc. structures 2.482 mi. Proj. F 030-4 (3) Beadle Co. CD 8/18.

▲ **TEXAS**—State Hy. Comn., Austin, Bids opened 9/16,

Tex.—**Strain Bros., Inc.,** P. O. Box 1631, San Angelo, Tex., LB **$455,924,** flex. base, b. conc. pavement 19.533 mi. Hy. 55, Proj. S 186 (2), Real and Uvalde Counties;

Tex.—**Strain Bros., Inc.,** Box 1631, San Angelo, Tex., and **E. M. Bailey Contractors,** P. O. Box 2119, Abilene, Tex. LB **$1,166,651,** flex. base, b. conc. pavement 3.697 mi. Hy. IH 20, Proj. I 20-2 (27) 240, Nolan Co.;

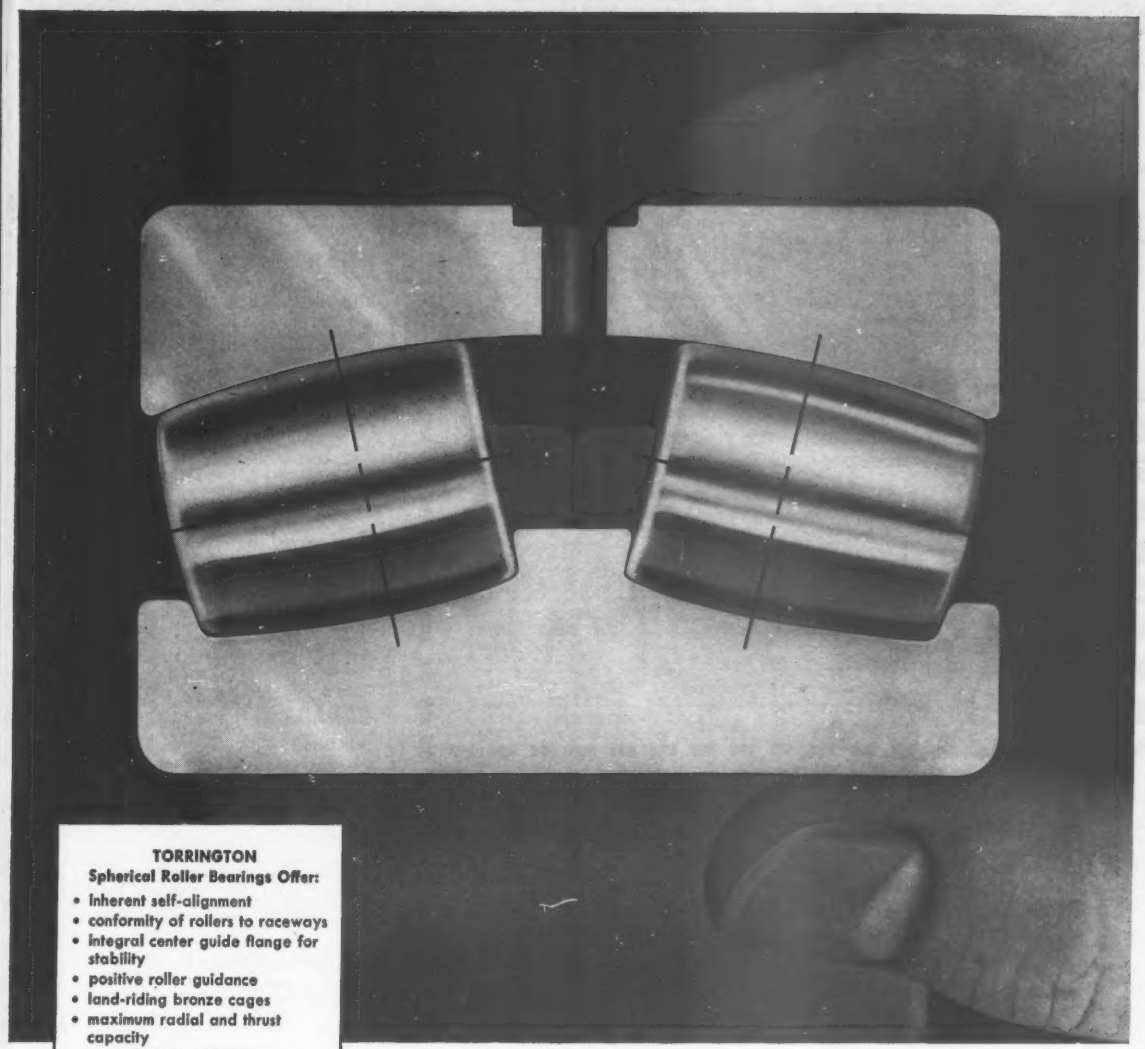
Tex.—**Gilvin-Terrill, Inc.,** P. O. Box 2268, Amarillo, Tex., LB **$426,617,** flex. base, b. conc. pavement 15.915 mi. Hy. U. S. 385 and FM 1913, Proj. S 1510 (9) & S 2290 (2), Hartley, Oldham and Moore Counties;

Tex.—**Cecil Ruby Co., Inc.,** 907 Brown Bldg., Austin, Tex., LB **$2,017,652,** flex. base, b. conc. pavement 8.295 mi. Hy. IH 10, Proj. I 10-4 (16) 603, Guadalupe Co.;

Tex.—**Williams Bros. Constr. Co., Inc., F. M. Reeves & Sons and Texas Bitulithic Co.,** P. O. Box 15066, Houston, Tex., LB **$3,854,878,** cement base, concrete paving 1.664 mi. Hy. U. S. 59, Proj. U 514 31), Harris Co. CD 9/3.

▲† **Hopkins Constr. Co.,** 1340 South Lipan, Denver, Colo., LB **$923,367,** Schedule One, completion time Nov. 15, LB **$898,867,** Schedule Two completion time Dec. 15, LB **$844,967,** Schedule Three completion time Jan. 15, (13 bidders), Norad Command Headquarters Roads, COLORADO SPRINGS, COLO. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Sept. 16. CD 9/4.

(Continued on page 88)



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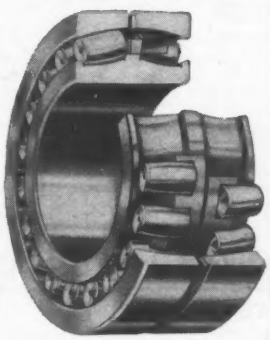

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(Continued from page 86)

BUILDINGS—LB & CA

▲ **Winn-Senter Constr. Co.,** 901 W. 43rd St., Kansas City, Mo., LB Est. over $3,000,000, 20 story, 58x175 ft., rein.-con., face brick, air-conditioned Wornall Towers APARTMENT, incl. underground garage, KANSAS CITY, MO. Wornall Towers, Inc., c/o Edward W. Tanner & Assocs., archts., 310 Ward Parkway, Kansas City 12, Mo. Shaad & Viets, 5302 Martway, Mission, Kan., electrical engrs. Alfred Masterson, 6 W. 10, Kansas City, Mo., consult. engr. James S. Dukelow, 7481 Village, Prairie Village, Kan., heating engr. Bids Aug. 27.

▲† **Robert E. McKee,** Federal Reserve Bank Office, Wood and Browder Sts., Dallas, Tex., CA $5,671,400, FEDERAL OFFICE BLDG., LITTLE ROCK, ARK. General Services Admin., 1114 Commerce St., Dallas, Tex. Bids June 30. DC 7/6, under LB.

▲ **Mid-South Texas Investment Corp. of Austin, Tex.,** c/o Don L. Harter, archt., Johnson Dr. and Mall, Mission, Kan., Owner Builds, $1,000,000, three 2 story, 78 unit, concrete block and brick, stone garden type APARTMENTS, incl. 94-car underground parking, sw. pool, MISSION, KAN. James L. O'Bryan & Assocs., 7134 W. 80th, Overland Park. Kan., engrs.

▲ **State Bd. Educ.,** Capitol Bldg., Helena, Mont. rejected bids Sept. 15, PHYSICAL EDUCATION BLDG., Eastern Montana College of Education BILLINGS, MONT. Est. $1,400,000. Will re-advertise. CD 8/18.

Peerless Builders, Inc., 446 Broadway, Denver, Colo., Separate Contracts, $800,000, four 2 story APARTMENTS, incl. 50 ft. swimming pool, AURORA, COLO. Ralph E. Peterson & Arthur Auburn, 1750 Humboldt, Denver, Colo., archts.

▲ **Long Constr. Co.,** 1165 South Pennsylvania St., Denver, Colo., CA Est. $5,000,000, FACTORY, DENVER, COLO. Bowman Biscuit Co., 842 Walnut, Denver, Colo. Bids Sept. 15. CD 7/21.

FAR WEST

HEAVY CONSTRUCTION—BA

▲ **Calif., Los Angeles**—BA 10/16—Los Angeles Flood Control Dist., 2250 Alcazar St., Proj. No. 21, Artesia-Norwalk Storm Drain, Unit Two, Lines A, B, E, F, G and H, Cities of Artesia, Dairy Valley and Norwalk. $5,000,000. CD 11/7/52.

HEAVY CONSTRUCTION—LB & CA

▲ **Pomeroy-Bates and Rogers-Gerwick,** 120 Montgomery St., San Francisco, Calif., CA $16,641,000, 3,350 ft. long Webster Street Tube under Oakland Estuary between Oakland and Alameda to provide two lane roadway parallel to present Posey Tube consisting of 12 tube sections each 200 ft. long and 37 ft. diam. connected at depth of 90 ft., CALIFORNIA. State Div. Hys., 1120 N St., Sacramento, Calif. Bids Sept. 10, awarded Sept. 18. CD 9/14, under LB.

▲† **Pacific Dredging Co.,** 14409 South Paramount Blvd., Paramount, Calif., LB $3,997,808, (5 bidders), dredging and revetment Playa del Rey Harbor, Venice, ENG-04-353-60-5, CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Sept. 16. CD 8/28.

▲ **Vinnell Co., Inc. & Ukropina-Polich-Krall,** 1145 Westminster Ave., Alhambra, Calif., CA $2,671,430. Storm Drain Proj. 67, Unit 2, Hollenbech Heights Drainage Sys., LOS ANGELES, CALIF. Los Angeles County Flood Control Dist., 2250 Alcazar St., Los Angeles, Calif. Bids Sept. 4, awarded Sept. 15. CD 9/17, under LB.

▲ **Walsh Constr. Co.,** 2 Pine St., San Francisco, Calif., CA $6,387,880, Camino Tunnel, appurtenant works, access road, Upper American River Proj., El Dorado Co., Inv. No. 2212, SACRAMENTO, CALIF. Sacramento Municipal Utility Dist., Engineering Dpt., 1708 59th St., Sacramento, Calif. Bids Sept. 15, awarded Sept. 17. CD 9/17, under LB.

BUILDINGS—LB & CA

▲ **L. M. Halper & Co.,** 739 N. Highland Ave., Los Angeles, Calif., CA $2,500,000, 100,000 sq. ft. precast concrete DEPARTMENT STORE, Rosecrans Blvd. at La Mirada Shopping Center, LA MIRADA, CALIF. Ohrbacks Department Store, 5711 Wilshire Blvd., Los Angeles, Calif. Welton Becket & Assocs., 5657 Wilshire Blvd., Los Angeles, Calif., archts.

▲ **S. J. Kreedman & Co.,** 9350 Wilshire Blvd., Beverly Hills, Calif., Owner Builds, $3,150,000, 158x164 ft. concrete MEDICAL OFFICE, 4900 Sunset Blvd., $1,080,000, concrete OFFICE, 6006 Wilshire Blvd., LOS ANGELES, CALIF. Sidney Eisenshtat, 1145 S. Beverly Dr., Los Angeles, Calif., archts. Mackintosh & Mackintosh, 306 N. Vermont Ave., Los Angeles, Calif., engrs.

▲ **Puget Sound Bridge & Drydock Co.,** 2929 16th Ave. S.W., Seattle, Wash., and **Diversified Builders, Inc.,** 6855 E. Rosecrans St., Paramount, Calif., CA Est. $5,000,000, 1st unit 100,000 sq. ft. HEADQUARTERS PLANT, NEWPORT BEACH, CALIF. Lockheed Aircraft Corp., 2555 N. Hollywood Way, Burbank, Calif. Daniel, Mann, Johnson & Mendenhall, 3325 Wilshire Blvd., and William L. Pereira Assocs., 1231 W. 5th St., both Los Angeles, Calif., archts. CD 9/3, under CA.

▲ **Marine Development, Inc.,** 2170 Avenida de La Playa, La Jolla, Calif., CA $1,253,579, 130 stucco DWELLINGS, Highland Park Estate Tract No. 5, SAN DIEGO, CALIF. Heritage, Inc., Box 1122, La Jolla, Calif.

CANADA

BUILDINGS—BA

Ont., Toronto—SCHOOL—BA 10/8—Toronto Bd. Educ., 155 College St., 3 story, 118x144 ft. structural steel, concrete, masonry Kent Public School addn. $915,100. Plans deposit $50. Carter, Coleman & Rankin, 2201 Kingston Rd., archts. CD 3/27.

BUILDINGS—SLC

▲ **Que., Montreal**—CENTRE MARIAL—Rev. Peres Montfortains, Maison Provinciale, 5637 Stirling St., LaSalle, soon lets contract 4 story, bsmnt., centre marial, incl. retreat house residence, church, Sherbrooke St. E. $1,225,000. Roux & Morin, 0119 Clement St., LaSalle, archts., Gagnon & Horvath, 332 Craig St. E., engrs.

BUILDINGS—LB & CA

▲ **Burns & Dutton Constr. Co. Ltd.,** 4720 4th St. S.E., Calgary, Alta., CA Est. $4,000,000, PIPE MILL, Ogden Dist., CALGARY, ALTA. Big Inch Pipe Corp., Ltd., Calgary, Alta. (Correction—contractor). CD 5/14, under CA.

▲ **Cullen Constr. Co. Ltd.** 6 Halsey Ave., Toronto, Ont. LB $1,169,000, (9 bidders), 2 story, 65 ft. and 1 story, 130 x 190 ft., precast concrete, structural steel Southview COLLEGIATE WING, Kipling St., TORONTO, ONT. North York Bd. Educ., 15 Oakburn Crescent, Willowdale, Toronto, Ont. Bids Sept. 10. CD 8/21.

FOREIGN

BUILDINGS—LB & CA

▲ **M. J. Gleeson,** North Cheam, Surrey., CA Est. $1,120,000, superstructure, Belvedere POWER STATION, near Kent, ERITH, ENGLAND. Central Electricity Generating Bd., Trafalgar Bldgs., London, S.W. 1, England.

AMERICANS ABROAD

BUILDINGS—BA

▲ **Denmark, Kalundborg**—PETROLEUM REFINERY, etc. —Bids Asked—Tidewater Oil Co., 4201 Wilshire Blvd., Los Angeles 5, Calif., U.S.A., petroleum refinery and storage terminals for Dansk Veedol. $3,000,000.

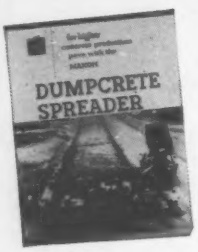
PROPOSED PROJECTS

WATER SUPPLY

▲ **Tex., Lubbock**—City, City Hall, voted bonds Sept. 10, Item No. 4, water distr. sys., $1,250,000; Item 5, water reservoir, $2,500,000; Item 6, WW sys. rehabilitation, $250,000. CD 7/16.

SEWERS, WASTE DISPOSAL

▲ **Calif., Carlsbad**—City, City Hall, $1,200,000 bond election Oct. 13, rehabilitate sewers and constr. outfall sewer and plant. CD 8/10.



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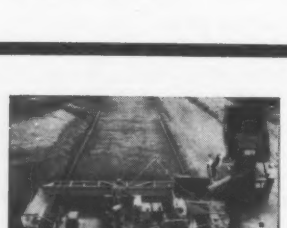

▲ **Ill., Hoopeston**—City, City Hall, sanitary sewerage sys. imprvs. $1,750,000. Warren & Van Praag, Inc., 253 S. Park St., Decatur, consult. engr.

▲ **Tex., Houston**—City, City Hall, voted bonds Sept. 12, storm sewers, $10,000,000; sanitary sewers, $7,000,000. CD 8/14.

▲ **Tex., Lubbock**—City, City Hall, voted bonds Sept. 10, Item No. 8, sanitary sewers, $1,000,000; Item No. 9, sanitary sewerage sys. rehabilitation, $100,000; Item No. 10, storm sewers, $120,000. CD 7/16.

▲ **Utah, Farmington** — South Davis Co. Metropolitan Sewer Dist., Farmington, bond election Oct. 13, sewage collection and treatment plant facilities. $3,800,000. Nielsen, Reeves & Maxwell, and Henningson, Durham & Richardson, 275 E. 4425 South, Washington Terrace, Ogden, consult. engrs.

BRIDGES

▲ **NEW YORK**—Dpt. P. Wks., Smith Memorial Bldg., Albany, Zone 1,
Erie Co.—South Grand Island Bridge. $9,000,000. Bids Fall 1959.

▲ **Tex., Houston**—City, City Hall, voted bonds Sept. 12, grade separations, $4,000,000; bridges, $3,000,000. CD 8/14.

STREETS AND ROADS

▲ **CONNECTICUT**—State Hy. Dpt., 24 Wolcott Hill Rd., Wetherfield,
New Haven—Interchange, Rtes. U. S. 6 and 8. $1,000,000. Howard, Needles, Tammen & Bergendoff, 99 Church St., New York, N. Y. consult. engrs. CD 9/26/58.

▲ **Conn., Milford**—Town, Town Hall, access roads to proposed industrial section adjacent to Housatonic River, Devon. $1,460,000. CD 9/15/58.

▲ **Tex., Houston**—City, City Hall, voted bonds Sept. 12, permanent streets paving, $5,650,000; streets topping, $3,000,000. CD 8/14.

▲ **Tex., Lubbock**—City, City Hall, voted bonds Sept. 10, Item No. 1, street paving, imprvs., $2,500,000; Item No. 2, street paving, reworking $700,000. CD 7/16.

EARTHWORK, WATERWAYS

▲† **Arkansas**—U. S. Eng., P. O. Box 867, Little Rock, Beaver Reservoir, White River Watershed, $1,500,000 appropriated. (Total cost $56,100,000).

▲ **California**—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., Trinity Dam Power House, $2,415,000 appropriated. CD 9/30/58.

▲† **California**—U. S. Eng., 751 S. Figueroa St., Los Angeles, improving San Jacinto River, $1,378,000 appropriated.

▲† **California**—U. S. Eng., 1209 8th St., Sacramento. New Hogan Reservoir, Calaveras River, near Stockton, $1,500,000 appropriated. (Total cost $19,300,000).

▲† **California**—U. S. Eng., 180 New Montgomery St., San Francisco, Mill Creek levees, $500,000 appropriated. (Total cast $1,740,000).

▲ **Calif., Santa Cruz**—City, City Hall, dam, Newell Creek, Ben Lomond. $1,000,000. Creegan & D'Angelo, 1046 W. Taylor St., San Jose, consult. engrs.

▲† **Connecticut**—U. S. Eng., 424 Trapelo Rd., Waltham, Mass., Mad River Reservoir, $250,000 appropriated. (Total cost $2,210,000). CD 12/24/57.

▲† **Iowa**—U. S. Eng., Clock Tower Bldg., Rock Island, Ill., Red Rock Reservoir, $1,000,000 appropriated.

▲† **Kansas**—U. S. Eng., Box 61, Tulsa, Okla., Council Grove Reservoir, Grand (Neosho) River. $1,113,000 appropriated.

▲† **Kentucky**—U. S. Eng., 306 Federal Office Bldg., Nashville, Tenn., Barren Reservoir No. 2, Barren River. $500,000 appropriated. (Total cost $12,700,000).

▲† **Louisiana**—U. S. Eng., foot of Prytania St., New Orleans, Zone 9, Algiers Cutoff, Gulf Intracostal Waterway. $1,000,000 appropriated.

▲† **Louisiana**—U. S. Eng., foot of Prytania St., New Orleans, imprv. Barataria Bay. $1,000,000 appropriated. CD 9/26/58.

▲† **Massachusetts**—U. S. Eng., 424 Trapelo Rd., Waltham, Mass., Imprv. Boston Reserve Harbor. $1,420,000 appropriated. CD 9/26/58.

▲† **Michigan**—U. S. Eng., 1101 Washington Blvd., Detroit, imprv. Grand Marais Harbor. $1,800,000 appropriated.

▲† **Missouri**—U. S. Eng., Clock Tower Bldg., Rock Island, Ill., Des Moines and Mississippi Levee Districts. $1,242,000 appropriated.

▲† **Montana**—Bureau Reclamation, Dpt. Interior, Bldg. 1A Denver Federal Center, Denver, Colo., East Bench unit Missouri River Proj. $1,000,000 appropriated.

▲† **New York**—U. S. Eng., 111 E. 16th St., New York, Zone 3, imprv. Buttermilk Channel, $1,500,000 appropriated. CD 9/25/58.

▲† **North Carolina**—U. S. Eng., 308 Custom House, Wilmington, Wilkesboro Reservoir on Yadkin River, $1,000,000 appropriated.

▲ **Pennsylvania**—Pa. Dpt. Forests & Waters, Education Bldg., Harrisburg, drainage sys., Frankford section to Phila. to prevent floods, Philadelphia Co. $3,000,000.

▲ **Tex., Hallettsville**—Hallettsville Flood Control Dist. No. 3, Bd., City Hall, flood control work. $1,000,000. (Correction—location of project). CD 9/4.

▲† **Virginia**—U. S. Eng., 237 4th Ave., Huntington 18, W. Va., Pound River Reservoir, $2,500,000 appropriated.

▲† **West Virginia**—U. S. Eng., 237 4 Ave., Huntington, Summersville Reservoir, Gauley River, Ohio River Basin, $2,000,000 appropriated.

▲† **Wyoming**—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo., Seedskadee Project. $1,354,000 appropriated.

AIRPORTS

▲ **Neb., Lincoln**—AIRPORT—Lincoln Airport Auth., City Hall, municipal airport, incl. 150x6,700 ft. N-S concrete paved runway, taxiways, control towers, hangars, administration bldg., grading, fencing, water, sewer, gas and electrical lines, etc., eastern edge of city. $3,467,417. Harold Hoskins & Assocs., 1630 Que St., consult. engrs. CD 9/11.

▲ **Tex., Houston**—AIRPORT—City, City Hall, voted bonds Sept. 12, airport, $6,000,000. CD 8/14.

LATIN AMERICA

▲ **Cuba**—PLANT—General Electric Co., River Rd., Schenectady, N. Y., U. S. A., lamp mfg. plant, site not selected. $2,000,000. Agricultural & Development Bank, c/o Govt. of Cuba, Havana, will help finance.

▲ **Dominican Republic**—Dominican Republic, Cuidad Trujillo, hydro electric project for power, irrigation on Yaque River, near Tavera. $15,000,000.

▲ **Mexico, Mexico City**—Dpt. Federal Dist., Mexico City, sewerage sys. and drains, 17 kilometers from Magdalena River to Los Remedios. $9,200,000.

AMERICANS ABROAD

▲ **Poland, Cracow**—CHILDRENS HOSPITAL—American Research Hospital for Children, University of Cracow, plans by W. O. Biernacki-Poray, 195 Christopher St., Montclair, N. J., U.S.A., childrens hospital. $4,000,000.

FOREIGN

▲ **France**—Govt. of France, flood control and irrigation dam on Thur River at Schlossberg. $2,000,000.

▲ **India** — ATOMIC POWER PLANT — Govt. of India, Delhi, 250,000 kw. atomic power plant between Ahmedabad and Bombay. $115,000,000. Bids on design will be asked at end of 1959.

▲ **Kenya, Mombasa**—REFINERY—Govt. Kenya, Nairobi, Royal Dutch Shell Corp., The Netherlands and British Petroleum Co. Ltd., London, England, refinery in Chamgamwe district. $45,000,000. To go ahead 1960.

▲ **Pakistan, Karachi**—POWER PLANT—Karachi Electric Supply Corp. Ltd., Karachi, 14,700 kw. diesel power plant, Sind Industrial and Trading Estate area. $3,000,000.

▲ **Pakistan**—West Pakistan Water & Power Development Auth., West Pakistan, 14,000 ft. long, 350 ft. high Mangla Dam incl. 70,000,000 cu. yd. embankment. District Jhelum. Bids 1959. Bidders must prequalify before Oct. 19. Binnie, Deacon & Gourley, Artillery House, Artillery Row, London, S.W.1, London, England, consult. engrs.

PUBLIC BUILDINGS

▲† **California**—HEAT REACTOR—Atomic Energy Comn., 1901 Constitution Ave. N.W., Wash., D. C., 400,000 kw. experimental low-temperature process heat reactor, site not selected. Will supply heat for sea water distillation plant to be constructed by office of Saline Water, Dpt. Interior, $4,000,000. Sargent & Lundy, 140 S. Dearborn St., Chicago, Ill., consult. engrs.

▲ **Calif., Carmichael**—SCHOOL—San Juan Union High School Dist., 3738 Walnut St., high school. $4,169,112. Constr. October 1962. CD 5/3/57.

Calif., Lakeside—SCHOOL—Lakeside Union Elementary School Dist., $1,750,000 bond election Oct. 27. schools.

▲ **Calif., Los Angeles**—CIVIC CENTER OFFICE, etc.—Los Angeles Dpt. Water & Power, 316 W. 2nd St., plans by Albert C. Martin & Assoc., 333 S. Beaudry Ave., 700,000 sq. ft. civic center office and 2500 auto parking. CD 1/17/55.

▲ **Calif., Los Angeles**—MUSEUM OF CONSTRUCTION—Pepperdine College, 1121 79th St., Museum of Construction. $2,000,000. To go ahead January 1960.

▲ **Calif., Yuba City**—SCHOOL—Yuba College Dist., 18th and B Sts., bond election Nov. 17, school, Marysville, $2,800,000, Harold Hansen, 17th & B Sts., Marysville, archt. CD 12/7/55.

▲ **Conn., Torrington**—SCHOOL—Town, Town Hall, referendum Oct. 5, on $3,500,000 bond issue, high school. Nichols & Butterfield, 998 Farmington Ave., West Hartford, archts. CD 12/11/57.

▲ **Hawaii, Honolulu** — HOUSES — Hawaiian Housing Authority, 1002 N. School St. plans by Law & Wilson, 441 N. Kins St. and T. A. Vierra, 1633 Kapiolani, Honolulu, 176-unit Halawa-Kai Housing, $3,200,000.

▲ **Ind., Angola**—SCHOOLS—Metropolitan School Dist., Angola, plans by Mauer & Mauer, 312 Lafayette Bldg., South Bend, 1 story, brick, block elementary school, 2 story, brick, block high school addn., northeast side of Angola-Stuben, $1,000,000. Bevington, Taggart & Fowler, Inc., 725 K of P Bldg., Indianapolis, consult. engr. CD 7/10.

▲ **Ind., Fort Wayne** — DORMITORY — State Div. P. Wks. & Supply, State House, Indianapolis, plans by A. M. Strauss & Assocs., Inc., 601 Strauss Bldg., 1 story, bsmnt., brick, rein.-con. steel dormitory for State School, $1,000,000. Noren & Dinius, 2707 S. Calhoun St., consult. engrs. CD 6/29/55.

▲ **Ind., Frankfort** — SCHOOL — Clinton Prairie Consolidated Corp., R R 5, plans by Everett I. Brown Co., 901 Illinois Bldg., Indianapolis, 2 story, structural steel, concrete Junior-Senior High School. $1,200,000.

▲ **Ind., Princeton**—HOSPITAL—Gibson General Hispital, Princeton, plans by Walker-Applegate-Oakes & Ritz, 218 Elsby Bldg., New Albany, hospital, on 8 acre site, $1,750,000. J. M. Rotz Eng. Co., 1919 N. Meridian, Indianapolis, consult. engr.

▲ **Mass., Boston**—CITY HALL—City, Mayor's Office, City Hall, city hall. $14,000,000. Site not selected. DeLeuw, Cather & Brill, 202 E. 44th St., New York, N. Y., engrs. Constr. 1960.

▲ **Mass., Marlboro**—SCHOOL—City, Supt. Schools High School, Main St., plans by Edward J. Tedesco, 15 Pleasant St., Woburn, high school-municipal home site, Bolton St. $2,500,000. CD 8/8/57.

▲ **N. J., Cranford**—SCHOOL—Bd. Educ. Twp. of Cranford, plans by Epple & Seaman, 901 Broad St. Newark, 3-year high school, Orange Ave. $1,250,000.

▲ **N. J., Harrison**—SCHOOL—Bd. Educ., 221 Cross St., plans by Alfonso Alvarez, 204 Bellevue Ave., Upper Montclair, high school. $2,000,000. CD 12/6/57.

▲ **N. J., Irvington**—LIBRARY—Town, Town Hall, plans by George Hechtel, 1039 Springfield Ave., municipal library, $1,000,000.

▲ **N. J., Paterson**—SCHOOL—City, City Hall, high school for 1st Ward, $1,000,000.

▲ **N. J., Vineland**—SCHOOL—City, City Hall, referendum on bonds and project Nov. 3, high school, $3,750,000. Ralph Hacker, 854 River Rd., New Milford, archt. CD 1/9/58.

▲ **N. Y., New York**—BUS TERMINAL SUPERSTRUCTURE, etc.—Port of New York Auth., 111 Eighth Ave., Zone 11, superstructure and ramps on roof Bus Terminal 8th Ave. and W. 41st. St. $19,000,000.

▲ **Pa., Ambler**—SCHOOL—Ambler Jt. School Dist., Ambler, high school, $1,500,000.

▲ **Pa., Pittsburgh**—SCHOOLS—Pittsburgh School Dist., 341 S. Bellefield Ave., four elementary schools and one elementary school addn. $3,393,600.

▲ **Pa., Reynoldsville** — SCHOOL — Reynoldsville-Winslow Jt. School Dist., Reynoldsville, high school, $1,500,000.

▲ **Tex., Houston**—CITY HALL—City, City Hall, voted bonds Sept. 12, city hall addn., $2,000,000. CD 8/14.

▲ **Tex., Houston**—CIVIC CENTER—City, City Hall, voted bonds Sept. 12, Civic Center addn., $2,000,000. CD 8/14.

▲ **Tex., Lubbock**—CITY HALL, City, voted bonds Sept. 10, city hall, $1,650,000. CD 7/16.

▲ **Utah, Salt Lake City**—ENGINEERING—Utah State Building Bd., 419 State Capitol, Salt Lake City, plans by Dean L. Gustavson & Associates, 15 NW Temple, Second Phase of University Engineering, $800,000; Third Phase of University Engineering, $1,600,000; Fourth Phase of Engineering Bldg., $1,600,000. CD 6/57.

▲ **Va., Charlottesville** — CHEMISTRY — University of Virginia, Dr. Edgar F. Shannon Jr., pres., chemistry bldg. at University of Virginia. $3,750,000.

▲ **Va., Charlottesville**—DORMITORIES—University of Virginia, Charlottesville, seven dormitories. $2,886,000.

▲ **Va., Harrisonburg**—DINING HALL, etc.—Madison College, Harrisonburg, dining hall, classroom, and dormitory, $3,496,900.

▲ **Va., Norfolk**—CLASSROOM—Virginia State College, Norfolk Div., Corprew Ave., classroom. $2,871,260.

▲ **Va., Petersburg**—GYMNASIUM, etc.—Virginia State College, Ettrick, Petersburg, gymnasium and agricultural classroom. $3,346,042.

▲ **Va., Richmond**—MEDICAL EDUCATION—Medical College of Virginia, 1200 E. Broad St., plans by Merrill C. Lee, state archt., 601 E. Franklin St., medical education bldg., 11th St. to 12th on Marshall St. $5,500,000. CD 5/6/55.

▲ **Va., Richmond** — CENTENNIAL CENTER — Virginian Civil War Comn., State Office Bldg., circular Centennial Center Bldg., 115 ft. diam., roof domed, shell of light concrete or aluminum. $1,000,000.

▲ **Wash., Bellevue**—BUSINESS CENTER—Overlake Park Assoc., B. J. McNee, mgr., 437 108th St. N.E., plans by John Graham & Co., 1426 5th St., Seattle, business center, east of here, $20,000,000. Bids first phase June 1960. CD 12/13/55.

▲ **Wash., Pullman**—Washington State University, Pullman, plans by Culler, Gale, Martell & Norrie, archts.-engrs., engineering bldg., $1,826,000; plans by Decker & Christensen, 1411 4th Ave. Bldg., Seattle, Zone 1, biological sciences bldg., $1,820,000; plans by Lea, Pearson & Richards, 240 Stadium Way, Tacoma, Zone 3, men's residences, $3,500,000; plans by Walker, McGough & Trogdon, W 1023 Riverside, Spokane, women's residences, $3,000,000; water distr. sys., $200,000.

▲ **Wash., Tacoma** — CIVIC AUDITORIUM — City, City Hall, civic auditorium, $6,000,000. Constr. 1962.

▲ **Wash., Tacoma**—SCHOOL—Franklin Pierce School Dist., 11124 Portland Ave., Junior High School, $1,000,000. Constr. 1961. CD 4/16/58.

▲ **Man., Winnipeg**—POLICE STATION—City, City Hall, police station. $2,500,000.

▲ **Ont., Cornwall**—Cornwall General Hospital Bd. Governors, 2nd St. E., plans by Comber, Comber & Mack, 120 Sydney St., C, hospital extension. $1,000,000. Agnew Peckham & Assocs., 200 St. Clair

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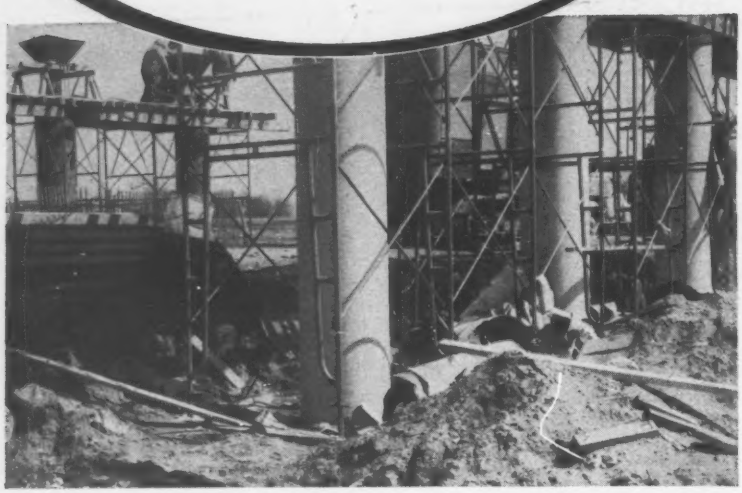

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Ave. W., Toronto, consult. engrs. Bids early 1960. CD 6/19/56.

COMMERCIAL BUILDINGS

▲ **Colo., Denver**—SCIENCE—University of Denver, University Park Campus, plans by Perkins & Will, 309 W. Jackson Blvd., Chicago, Ill., science bldg. $1,250,000. Fuller, Fuller & Fuller, Room 503 831 14 St., assoc. archts. CD 1/22.

▲ **Conn., Cheshire**—HOUSES—Anderlot Constr. Co., Inc., 7 Fenn Rd., 48 houses, "Radmere Estates" Jinny Hill Rd. $1,200,000.

▲ **Conn., Groton**—SHOPPING CENTER—John E. Hayes, 170 Sigourney St., Hartford, plans by Russell & Gibson & Assocs., 1005 Farmington Ave., West Hartford, 100,000 sq. ft. SHOPPING CENTER, Boston Post Rd., $1,000,000.

▲ **Hawaii, Honolulu**—HOTEL—Ebbtide Shores Inc., 270 Beachwalk, plans by Wimberly & Cook, archts.-consult. engrs., 315 Royal Hawaiian Ave., 11 story, 92 unit hotel, 2 levels parking, $1,000,000.

▲ **Ill., Chicago**—OFFICE AND APARTMENT—Building Services Employees International Union, 312, W. Randolph St., plans by Bertrand Goldberg Assocs., 721 N. Michigan Ave., 10 story office and apartment, Dearborn and State Sts., along Chicago River, $25,000,000.

▲ **Ill., Chicago** — HOSPITAL — St. Joseph's Hospital, 2100 Burling St., plans by Belli & Belli Co., Inc., 6040 W. Fullerton Ave., 12 story hospital, 2900 Lake Shore Dr. $12,000,000. Bids in 1961. CD 6/11/58.

▲ **Ind., Gary**—STORE, etc.—Owner, c/o Adolph J. Feinberg, 1044 Broadway, 1 story, brick furniture store, shopping center, parking area, 33rd and Grant Sts. $1,500,000. House of Muscat, 1044 Broadway, lessee for furniture store.

▲ **Ind., Valparaiso** — SHOPPING CENTER — M & M Enterprises, RFD 5, plans by Sydney H. Morris & Assocs., 134 N. LaSalle, Chicago, Ill., 15 units brick 1 story blk. shopping center, $1,500,000.

▲ **Ky., Lexington**—STORE—Associated Dry Goods Corp., 417 5th Ave., New York, N. Y., Stewart Dry Goods Store addn. Over $2,000,000.

▲ **Ky., Louisville**—MOTEL—Churchill Inn Corp., 2017 Belmont Blvd., Nashville, Tenn., plans by J. B. Gooch, 2017 Belmont Blvd., Nashville, Tenn., 120-130 room Churchill Inn Motel, Dixie Hy. $1,000,000.

▲ **Ky., Louisville** — APARTMENT HOTEL, etc. — Drybrough Enterprises, Inc., 620 S. 5th St., Zone 2, plans by Arrasmith & Tyler, 501 Park Ave., 29 story apartment hotel, underground parking garage, 4th and York Sts. Over $5,000,000. Loewenberg & Loewenberg, 120 S. LaSalle St., Chicago, Ill., consult. archts. CD 9/10.

▲ **Mass., Attleboro**—SCHOOL, etc.—Roman Catholic Diocese of Fall River plans by Maginnis & Walsh & Kennedy, 126 Newbury St., Boston, Regional High School and Convent. $2,250,000. Constr. 1960.

▲ **Mass., Marlboro**—SHOPPING CENTER—Marlboro Shopping Plaza, c/o Roy F. Cicchetti, archt., 71 Oakdale Rd., Newton, shopping center, Rte. 20. $1,000,000. Constr. 1960.

▲ **Neb., Omaha**—SHOPPING CENTER—Brandeis Investment Co., 16th and Douglas Sts., plans by Leo A. Daly, 8600 Indian Hills Dr., 2 story, 100,000 sq. ft. Brandeis Store, 1 story, 150,000 sq. ft. shopping center, paved lighted parking, 72nd and Dodge Sts. $7,500,000.

▲ **Neb., Omaha**—SHOPPING CENTER—John A. Wiebe, 95th and Main Sts., Ralston, plans by Leo A. Daly, 8600 Indian Hills Dr., Westroads Shopping Center, between 98th and 102nd Sts. north of Dodge. $10,000,000. CD 6/9.

▲ **N. H., Concord**—SHOPPING CENTER—All State Realty Corp., 150 Causeway St., Boston, Mass., plans by Harvey & Provost, 150 Causeway St., Boston, Mass., shopping center. $1,500,000. Constr. 1960.

▲ **N. J., Bloomfield**—APARTMENT—Union Village, Inc., c/o Kaplan & Stier, Broad St., plans by Levon M. Khachadourian, 572 Bloomfield Ave., 136 unit garden apartment, Broad St.; $1,250,000.

▲ **N. J., Hoboken**—STUDENT-FACULTY CENTER—Stevens Institute of Technology 5 and Hudson Sts., plans by John J. McNamara, 701 7 Ave., New York, N. Y., 9 story, 65,000 sq. ft. student faculty center. $1,750,000. Stephen F. Voorhees, 101 Park Ave., New York, N. Y., consultant. CD 9/16.

▲ **N. J., Lakehurst** — SHOPPING CENTER — Lakehurst Shopping Center, Inc., c/o Gerald J. Oakley, archt., 35 Liberty Rd., Bergenfield, shopping center, 150 unit motel, garden apartment and residential developments. $1,000,000.

▲ **N. J., Mendham**—HOUSES—James V. Dunbar, 75 Riveredge Rd., New Shrewsbury, 48 houses, West Main St. $1,000,000.

▲ **N. J., Morristown**—INN—Mallyn, Inc., 2908 31 Ave., Astoria 6, N. Y., plans by A. W. Geller, 333 E. 23 St., New York, N. Y., inn, Whippany Rd. and Morris St. $1,000,000. CD 1/20, under Hosinger & Bode as owner.

▲ **N. J., Princeton**—CLUB HOUSE, etc.—Princeton Recreation Center, Inc., R. D. No. 3, plans by Anthony Macaluso, 322 Stanley Ave., Havertown, Pa., clubhouse, motel, bowling alley, on Rte. 1, West Windsor Twp. $2,500,000. CD 6/16.

▲ **N. J., Union City**—HOUSES—Standard Bldg. Corp., Rte. 9, North Brunswick, 150 houses, New York and Hudson Aves. $3,000,000.

▲ **Pa., Phila.**—RESIDENTIAL DEVELOPMENT—Charles Woodward, Girard Trust Bldg., residential development (50), St. Martin's Lane, etc., $2,000,000.

▲ **Tex., Amarillo**—OFICE—Jack Vaughn & Richard Reeves, Ridgemore St., 2-story, brick, concrete, air-conditioned ground floors and 10-12 story tower, 4th and Polk Sts., $2,000,000.

▲ **Tex., Dallas** — REMODELING MART — Merchandise Mart, c/o J. B. Ragland, pres., Ervay and Young Sts., remodeling Merchandise Mart, $1,000,000.

▲ **Tex., Houston**—CLINIC etc.—Baylor University College of Medicine, 2310 Baldwin St. or 1200 M.D. Anderson Blvd., plans by John Freeman, Jr. & Kenneth E. Bentsen, 1700 S. Main St., 4 story Jesse Jones Memorial Clinic, $1,000,000; 4 story basic science research laboratory, $2,000,000. Walter P. Moore, 2 Pinedalde St., and Bernard Johnson & Assocs., 4926 Travis St., consult. engrs. CD 2/12.

▲ **Va., Richmond** — RESEARCH CENTER — Reynolds Metals Co., 301 E. Grace St., plans by Marcellus Wright & Son, 100 E. Main St. and Baskerville & Son, 2313 W. Cary St., research center, products display bldg., office. $5,000,000.

▲ **Wash., Seattle**—CLUB—Scottish Rite Temple, 1115 Harvard Ave., plans by Naramore, Bain, Brady & Johanson, 904 7 Ave., club, $1,000,000. Bids about Jan. 1. CD 11/26/57.

▲ **Wash.**—Seattle—HOSPITAL—Swedish Hospital, 1212 Columbia St., hospital addn. $1,500,000. constr. next year.

▲ **Wash., Seattle**—HOSPITAL—Virginia Mason Hospital, 1111 Terry St., hospital addn. $1,000,000. Constr. next year.

▲ **W. Va., Huntington**—OFFICE—Chesapeake & Ohio Ry., T. F. Burris, ch. engr. sys., Terminal Tower, plans by Douglas Orr, 111 Whitney Ave., New Haven, Conn., office bldg. $10,000,000. CD 5/8.

▲ **B. C., Fort St. John**—HOSPITAL—Sisters of Charity of Providence plans by Gardiner, Thornton, Gathe & Assocs. 1520 Alberni St., Vancouver, 63-bed general hospital, $1,800,000.

INDUSTRIAL BUILDINGS

▲ **Ala., Birmingham**—OFFICE, etc.—Louisville & Nashville R. R., J. B. Clark, ch. engr., 908 Broadway, P. O. Box 1198, Louisville 1, Ky., Bank for Savings & Trusts, 1924 1 Ave. N., Birmingham, plans by Lawrence Whitten, Brown-Marx Bldg., 2 story office bldg., with 10-14 story office tower, 2 story railroad passenger terminal Morris Ave., between 19 and 20 Sts. S. $1,000,000.

▲ **Calif., Newark**—PLANT—Bemis Bro. Bag Co., 408 Pine St., St. Louis, Mo., 1 story, 155,000 sq. ft. paper bag plant, to go ahead 1959.

▲ **Calif., San Jose**—PLANT—United Research Corp., Subsidiary United Aircraft Corp., 400 Main St., East Hartford, Conn., development and test plant for basic space and missile research principally in field of propellants in Hamilton Mountains, 12 mi. east of here. $3,500,000.

▲ **Calif., South San Francisco**—PLANT—J. A. Folger & Co., 101 Howard St., San Francisco, instant coffee plant, $2,000,000. Jack Y. Long Eng. Co., 132 9th St., Oakland, consult. engrs. CD 9/17.

▲ **Colo., Pueblo**—PLANT—Colorado Fuel & Iron Corp., Continental Oil Bldg. Denver plant imprvs. incl. oxygen converter system rolling mills etc. $21,000,000.

▲ **Conn., Milford**—PLANT—Eversharp, Inc., 350 Fifth Ave., New York, N. Y., plans by Caproni Assocs., 132 Temple St., New Haven, 1 and 2 story, brick, glass fountain pens and electric razors plant and office, Post Rd. $1,500,000. Hill & Harrigan, 909 Whalley Ave., New Haven, consult. engrs. CD 9/4.

▲ **N. J., Passaic**—PLANT—Pantasote Co., 26 Jefferson St., polyvinyl resin plant, $1,700,000. Scientific Design, Inc., 2 Park Ave., New York, N. Y., consult. engr.

▲ **N. Y., Lockport**—WAREHOUSE, etc.—General Motors Corp., Harrison Radiator Div., 500 Elm St., 180,000 sq. ft. warehouse and 200,000 sq. ft. manufacturing plant. $4,000,000.

▲ **Pa., Phila.**—WAREHOUSE, etc.—Food Fair Stores, Inc., 2223 E. Allegheny Ave., plans by Louis Kasoff, archt.-engr., c/o owner, 1 story, 650,000 sq. ft. warehouse and food distr., Phila. Food Distr. Center. $5,000,000.

▲ **Pa., Pittsburgh** — RESEARCH AND DEVELOPMENT CENTER—Aluminum Co. of America, Alco Bldg., plans by Harrison & Abramovitz, 630 5 Ave., New York 9, N. Y., research and development center at Merwin, $3,000,000.

▲ **Pa., Wilkes-Barre**—PLANT—Radio Corp. or America, 30 Rockefeller Plaza, New York 20, N. Y., plans by Lacy, Atherton & Davis, Hotel Sterling, 120,000 sq. ft. semi-conductor mfg. plant, Crestwood Industrial Park. $1,000,000.

▲ **Tenn., Kingsport**—PLANT—American Saint-Gobain Corp., 625 Madison Ave., New York, N. Y., 330 tons per day plate glass production plant. $50,000,000. (Correction—Owner's address). CD 8/14.

▲ **B. C., Woodfibre**—MILL—Rayonier of Canada Ltd., 1111 W. Georgia St., Vancouver, plans by Sandwell & Co., consult engrs.-archts., 1512 Alberni St., Vancouver, bleached sulphate paper mill, incl. four 60 x 90 x 100 ft. structural steel bldgs. $15,000,000.

UNCLASSIFIED

▲ **Tex., Houston**—PARKS, etc.—City, City Hall, voted bonds Sept. 12, parks, recreation, playgrounds, $4,000,000. CD 8/14.

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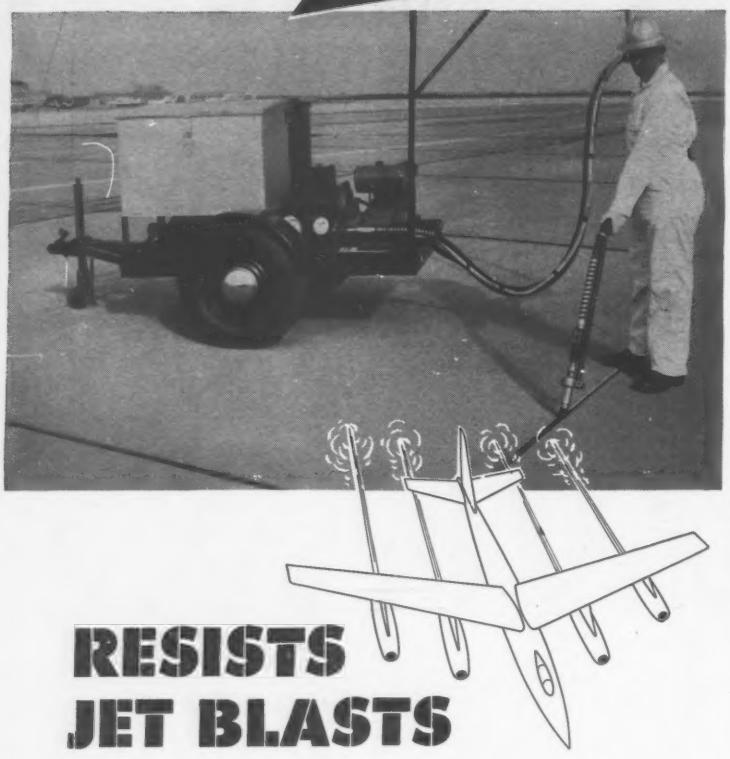

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CONSTRUCTION REPORTS
Second Section

MIDDLE ATLANTIC

BUILDINGS—BA

▲ **Pa., Foxcroft** — MENTAL HEALTH CENTER — BA 11/18—General State Auth., 18th and Herr Sts., Harrisburg., Haverford Mental Health Center, State Mental Hospital, Haverford Twp. (P. O. Havertown), $14,500,000. Plans deposit $200. Mental Hospital Associates, 1608 Fox Bldg., Phila., archts.-engrs. CD 10/3/56.

BUILDINGS—LB & CA

▲ **Hanover-Beaver Corp.,** c/o Howard Barnaby, 20 E. 46th St., New York 17, N. Y., Owner Builds, $7,000,000, 24 story OFFICE, 66 Beaver St., NEW YORK, N. Y. Henry George Greene, 855 Sixth Ave., New York 1, N. Y., archt. CD 1/24/58.

▲ **Frouge Constr. Co., Inc.,** 680 Fifth Ave., New York, N. Y., CA $6,167,000, fdns. and general contract STAPLETON HOUSES, Proj. No. NYS-88, Broad St., Tompkins Ave., Hill St., Warren St. and Gordon St., Richmond Boro, STAPLETON, N. Y. New York City Housing Auth., 299 Broadway, New York 7, N. Y. Bids Aug. 25. Grand total $8,294,727. CD 8/27, under LB;
H. Sand & Co., 11 Park Pl., New York 7, N. Y., CA $715,000, heating and ventilating Stapleton Houses, Richmond Boro (Stapleton, N. Y.);
Dropkin Bros., Inc., 149 Broadway, Brooklyn 11, N. Y., CA $598,990, electrical work, Stapleton Houses, Richmond Boro (Stapleton, N. Y.);
Novak & Co., Inc., 1503 East New York Ave., Brooklyn 12, N. Y., CA $813,737, plumbing, Stapleton Houses, Richmond Boro (Stapleton, N. Y.).

▲ **John McShain, Inc.,** 17th and Spring Garden Sts., Phila., Pa., CA $6,114,000, general constr. 784 bed INSTITUTION for mentally retarded children, Phase I, Western Pa. State School and Hospital, CANONSBURG, PA. General State Auth., 18th and Herr Sts., Harrisburg, Pa. Grand total $8,786,000. Bids Aug. 26, CD 8/28, under LB;
Daniel J. Keating Co., 3917 Baring St., Phila., Pa., CA $993,000, plumbing for Western Pa. State School and Hospital (Canonsburg, Pa.);
Limbach Co., 521 Pressley St., Pittsburgh, Pa., CA $1,679,000, heating and ventilating for Western Pa. State School and Hospital (Canonsburg, Pa.).

SOUTH

BUILDINGS—BA

▲ **Fla., Miami**—CRIMINAL COURT—BA 11/17—Bd. Comrs. Dade Co., Courthouse, criminal court bldg., NW 12 Ave. $5,000,000. Plans deposit $200. Coda Assocs., 206 Roper Bldg., Miami, archts. Bliss Eng. Co., Inc., 1370 Washington Ave., Miami Beach, structural engr. CD 4/22.

BUILDINGS—LB & CA

▲ **Hungerfor Constr. Co.,** Tampa, Fla., CA Est. $3,500,000, 180,000 sq. ft. glass container mfg. PLANT, 30 acre site, Tampa Industrial Park, TAMPA, FLA. Thatcher Glass Mfg. Co., Inc., 100 Polleck St., Elmira, N. Y. Reynolds, Smith & Hill Architects and Engineers, 403 Morgan St., Tampa, Fla., consult. archts.-engrs. CD 5/6.

MIDDLE WEST

BUILDINGS—BA

▲ **O., Cincinnati**—SCHOOL—BA 10/29—Forest Hills School Dist., 7537 Beechmont, 1 story, brick Senior High School, $11,200,000. Plans deposit $25. CD 6/17.

HEAVY CONSTRUCTION—LB & CA

▲† **Dunbar & Sullivan Dredging Co.,** 2312 Buhl Bldg., Detroit 26, Mich., CA $4,212,790, excavating Angle Courses 5 and 6, Angle Courses 6 and 7 and Course 7, West Neebish Channel, St. Marys River, CIVENG-20-064-60-2, Sched. No. 3, MICHIGAN. U. S. Eng., 1101 Washington Blvd., Detroit 31, Mich.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—LB & CA

▲† **American Machine & Foundry Co.,** 261 Madison Ave., New York, N. Y., CA $42,600,000, build, install, test 18 operational underground launching systems, Titan Intercontinental Ballistic Missile, Lowry Air Force Base, DENVER, COLO. Air Materiel Command, Ballistic Missiles Center, Inglewood, Calif. CD 4/16.

FAR WEST

HEAVY CONSTRUCTION—LB & CA

▲† **Pacific Dredging Co.,** 14409 South Paramount Blvd., Paramount, Calif., CA $3,997,808, dredging and revetment Playa del Rey Harbor, Venice, ENG-04-353-60-5, CALIFORNIA. U. S. Eng., 751 S. Figuerora St., Los Angeles, Calif. Bids Sept. 16. CD 9/21, under LB.

PUERTO RICO

BUILDINGS—LB & CA

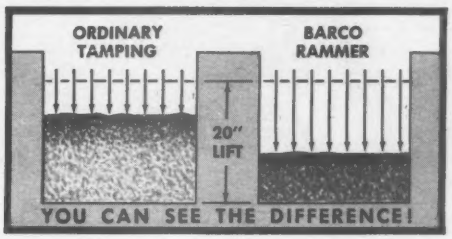
▲ **Interstate General Contractors, Inc.,** Calle Labra 800, San Juan, Puerto Rico, CA Est. $5,000,000, 500 HOMES, 110 acres tract called College Park, SAN JUAN, PUERTO RICO. Quality Homes, Inc., Calle Labra, 800, San Juan, Puerto Rico. Vicente Muniz Nunez, Labra 800, San Juan, Puerto Rico, archt.

(Proposal Advertisements see p. 104 to 106)

WHEN CONSTRUCTION JOBS CALL FOR SOIL COMPACTION

For Soil Compaction Close to Walls, Culverts and Abutments —in Trenches, Ditches

BARCO is the ANSWER!



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High degree soil compaction is worth every cent it costs. Barco Gasoline Rammers are especially effective for compacting fill in restricted areas—close to walls, culverts, abutments, around footings, and in trenches—on all kinds of construction jobs: Toll Roads, Freeways and Highways; Air and Missile Bases, Hydroelectric Power and Flood Control Dams, Bridges, Buildings, and Housing Developments.

ONE MAN OPERATION—On area tamping, one man can average 20 to 30 cubic yards of fill per hour. On 18″ trench backfill, using lifts up to 24″, the rate is 360 to 600 feet per hour. Economical to operate; economical to maintain.

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☐ Please send me the name and address of your nearest dealer.

☐ Without obligating me, I would be interested in a DEMONSTRATION.

☐ Please send General Catalog No. 621.

☐ Please send free bulletin on "SOIL COMPACTION COST DATA."

Thermaform kept this concrete at 95°-above in 5°-below weather!

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Gold Bond Thermaform comes in widths and lengths to fit all commonly used concrete-forms. Exterior paper and flanges are reinforced and the triple-ply flanges prevent pull-out in high winds. Thermaform can be left right on the form and used over and over again!

The contractor on this bridge job was faced with a tough decision. To stop pouring concrete for the winter would have meant falling weeks behind on the schedule. To enclose the bridge structure and heat artificially would have hiked costs terrifically. Then a construction specialties distributor suggested Thermaform, National Gypsum's new concrete-form insulation. Thermaform mineral wool blankets, applied to the concrete-forms, kept the concrete at *95 to 105 degrees* while air temperature ranged down to 5 and 6 degrees *below zero.* Each Thermaform blanket was left on its form for repeated use, further reducing the contractor's cost of protection.

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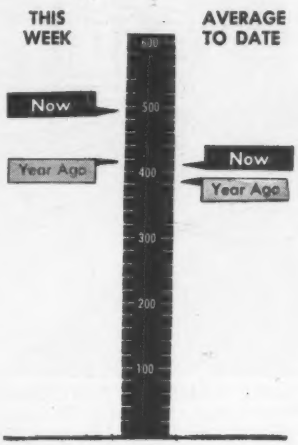
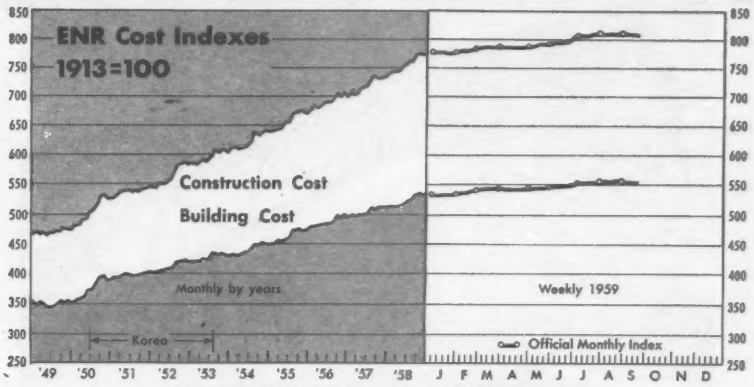
Construction Scoreboard

CONTRACTS ...





CURRENT COST INDEXES

ENR INDEXES (1913=100), 20-cities' average	Week of Sept 24 1959	% Change from Aug 27 1959	% Change from Sept 25 1958
Construction Cost	811.67	−0.01	+4.68
Building Cost	555.67	−0.02	+3.55

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

AMOUNT OF CONTRACTS LET

	This Week millions	Cum. 40 wks 1959	Chge '58-'59 %
All Heavy Constr.	$408.4	$16,271.6	+ 4
By Ownership			
PRIVATE	182.8	8,117.0	+29
PUBLIC	225.6	8,154.6	−12
State & Municipal*	120.0	5,856.3	−14
Federal	105.6	2,298.3	− 7
By Type of Work			
PUBLIC			
Waterworks	7.2	319.4	+29
Sewerage	12.2	510.1	+ 6
Bridges*	5.2	585.0	+ 4
Highways	42.1	2,353.3	−17
Earthworks, Dams & Waterways	16.5	717.5	−19
Buildings:			
Excl. Housing	80.3	2,075.1	− 3
Housing	10.7	500.2	−48
Unclassified	51.6	1,102.1	− 6
PRIVATE			
Buildings:			
Mass Housing	69.2	3,632.1	+20
Commercial	26.6	1,725.1	+16
Industrial	77.5	2,353.2	+63
Unclassified	9.3	398.5	+18

*Includes private bridges

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

CAPITAL . . .

New Capital For Construction	Week of Sept. 24 millions	Cum. 39 wks 1959	Chge '58-'59 %
Corporate Securities	$ 64.4	$2,753.1	−34
State and Municipal:			
All Except Housing	72.0	4,590.5	− 6
Housing	....	75.2	−34
Federal Loans	3.3	111.3	−29
Federal Aid	....	3,107.2	+20
Total Nonfederal	$139.7	$10,637.3	−11
Federal Appropriations:			
Projects in U. S.	$428.3	$3,564.1	−16
Outside U. S.	....	4.4	−90
Total New Capital	$568.0	$14,205.8	−12

BACKLOG OF PROPOSED HEAVY CONSTRUCTION

	August 1959 (millions)	Percent Change from last Month	Percent Change from last Year
Total U. S. (ENR reported)	$114,106	+0.3	+2.3
By Ownership—			
Private	50,186	+0.3	+4.2
State & Municipal	50,573	+0.3	+1.0
Federal	13,346	+0.2	+1.7
By Type of Work—			
Waterworks	2,690	+0.9	+1.5
Sewerage	3,638	+1.2	+6.1
Bridges	3,338	−0.7	+0.7
Highways	12,604	+0.2	−3.1
Earthwork, Dams & Waterways	11,557	−0.2	−0.8
Public Buildings	20,637	+0.7	+4.0
Industrial Buildings	16,990	+0.05	+3.2
Commercial Buildings	22,707	+0.7	−4.2
Unclassified, Private	10,490†	+0.1	+6.0
Unclassified, Public	9,454	−0.3	+0.05

† Includes private bridges $91 million

FLOW OF NEW PROJECTS INTO THE BACKLOG

	1959 Aug. (millions)	1959 8-months (millions)	Percent Change from '58 Aug.	Percent Change from '58 Year Cum.
Total U. S. (ENR reported)	$1,257	$12,150	+43.1	+21.8
By Ownership—				
Private	613	6,652	+24.2	+44.9
State & Municipal	523	4,569	+57.0	− 0.1
Federal	121	929	+133.7	+15.2
By Type of Work—				
Waterworks	43	288	+248.5	−25.8
Sewerage	85	437	+42.4	+ 1.8
Bridges	19	267	+81.4	− 0.1
Highways	125	1,121	+361.7	+ 0.8
Earthwork, Waterways	10	136	+94.1	−11.7
Public Buildings	308	2,572	+40.2	+10.2
Industrial Buildings	203	2,117	+240.0	+163.1
Commercial: Mass Housing	196	2,002	+ 6.2	+32.7
Other Building	185	1,783	−10.2	−11.6
Unclassified, Private	29	749*	−32.8	+187.8
Unclassified, Public	53	678	+ 7.1	− 2.9

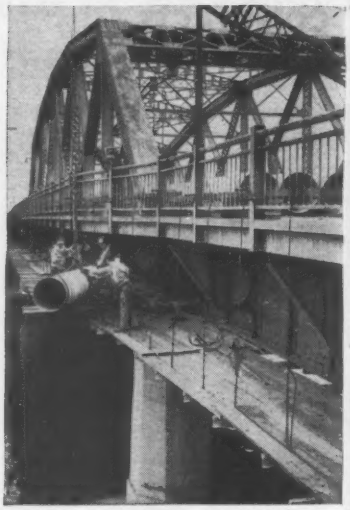
* Includes private bridges $9.1 million

FLOW OF PROJECTS OUT OF THE BACKLOG INTO CONTRACTS

Total U. S. (ENR reported)	$789	$7,225	− 0.2	+ 0.1
By Ownership—				
Private	369	2,560	+46.2	+25.0
State and Municipal	333	3,163	−25.0	−16.4
Federal	88	1,502	−37.4	+ 8.1

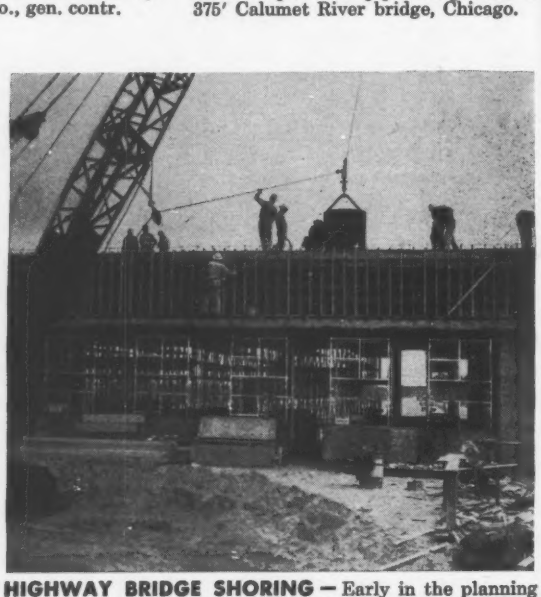
Scaffolding Methods . . . by Patent Scaffolding Co.

NEW SHORING METHOD CUTS STEEL ERECTION TIME 20%—By using "Trouble Saver"® Steel Shoring as temporary cribbing support for steel lamella design roof of new Ladue H. S. Auditorium, St. Louis, Kroger Erection Co., steel erectors, saves up to 20% of former job time needed. Fast handlng of simple steel shoring parts, practically no lumber reclamation, and minimum heavy machinery—only one crane needed—helps. Cristina Const. Co., gen. contr.



SIMPLE HANGING PLATFORMS—Workers use simple PS Co. hanging scaffolds made of 149 I-beams hung by 298 cable hangers attached to the bridge sides to place 24" pipe along sides of 375' Calumet River bridge, Chicago.

EASY-TO-ERECT SLOPING RAMP—"Trouble Saver" and "TubeLox" Shoring combine to provide support for this 7' wide ramp during concrete pouring operations at the Beth Israel Hospital, Newark, N. J. Basic sections of "Trouble Saver" are erected and then joined by lengths of "TubeLox". Note the variable frame heights and adjustable legs which make adaptation to the slope simple and easy.



HIGHWAY BRIDGE SHORING—Early in the planning stage of this bridge over new U. S. 31, near Muskegon, Mich., the blueprints were examined and a drawing of the "Trouble Saver" Sectional Steel Shoring was prepared. Provision was made for both supporting strength and impact load. Owen-Ames-Kimball Co., contractor, approved the drawing and rented the equipment.

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Money Costs Raise New Problem

- **Some mortgage bankers think the rising cost of money risks conflicts with state usury laws.**
- **Convention hears pessimistic report on urban renewal—it's just too slow, says Mason.**

The men who get up the money for building construction could find little for the industry to cheer about last week. Three major concerns shadowed the annual convention of the Mortgage Bankers Association in New York City:

- Mortgage money, already costlier and harder to get than a few months ago, will be even more expensive and scarcer in the months ahead.
- Urban renewal progress is barely discernible; alternate plans for ending city blight aren't working.
- Some mortgage lenders are growing apprehensive about a possible collision between rising interest rates and state usury laws.

Interest rates on conventional home mortgages are now crowding the legal ceilings in most states. And for the first time in perhaps 20 years, attorneys for banks and insurance companies are looking at the statute books covering usury as applied to housing mortgages.

The FHA maximum allowable rate increased last week from 5.25% to 5.75%. However, another ½% is added to the basic rate to cover the insurance premium, making the effective rate to the homebuyer 6.25%.

Most lenders feel the insurance premium cannot properly be considered interest, since the extra charge pays for a separate commodity—insurance.

Yet there is some concern in states where usury laws specify a 6% mortgage interest limit. "I'm sure some insurance companies are having their legal departments study the matter," an MBA spokesman says.

Conventional mortgages pose a different problem. Those loans are now going at 6%, which is the legal limit in most states. Where will lenders go from there if money rates in general continue to climb? Discounts and service charges are the obvious answer. But will lenders—particularly insurance companies—use those means to obtain more than the 6% yield on the face of the mortgage?

"Undoubtedly, lenders will be faced with some very grave legal questions when the ceiling is hit," says an executive of one of the nation's largest insurance companies.

Others indicate that if service charges on 6% loans are not violations of the letter of the law "they could be evasion of the spirit of the law."

Insurance companies, one of the major sources of mortgage loans, could well decide to avoid even that possibility. Companies with a nation-wide business come under the control of state insurance commissions. They could apply pressure on the insurance companies' basic function—insuring—to discourage service charges and other fees involving housing mortgages.

To avoid any such possibility, insurance companies could choose to withdraw from mortgage lending until interest rates dropped below the 6% legal limit.

The slow pace of urban renewal drew strong criticism from Norman P. Mason, Housing and Home Finance Agency administrator.

"It is shocking that we have during approximately 10 years of urban renewal, only 26 projects completed. That doesn't mean buildings on all of them either; it includes areas that are only cleared of buildings," the housing chief said (ENR July 9, p. 21). "Too many local governments are just grasping for more and more federal grants, more and more of the U.S. taxpayers' dollars," he charged.

Too many people have visions of dream cities, and too few know practical economics, according to Mr. Mason.

"Planners seem to like to keep on planning, and so rebuilding gets delayed," he said.

And an economic consultant to the MBA said, "Demolition is never going to solve the blight of the cities. There isn't enough money to do it, nor is there the time."

Members involved with urban renewal tended to agree. But they did not see such programs as neighborhood rehabilitation as adequate alternates.

Basic weakness of the idea of rehabilitation, according to the lenders, is that areas in need of such repair usually do not present a "lendable atmosphere."

Cities must guarantee that they will use their powers to eliminate detracting factors in areas that are to be rehabilitated, lenders said.

New zoning laws should apply immediately to existing properties that don't conform to them. "You can't establish a residential zone, and then let existing garages, coal yards and bars remain until their owners die," says an MBA spokesman. "Get rid of those down-grading elements immediately through condemnation, so that the character of the newly established neighborhood will be guaranteed from the start."

In support of the argument, members of MBA's urban renewal committee cite the Baltimore Plan (ENR May 28, 1953, p. 49). That plan consisted essentially of strict enforcement of housing laws and codes.

Committee members from the city, who have intimate knowledge of the operation, said, "A good job was done. The areas were closely inspected. There was wonderful enforcement, and even some neighborhood support."

But they added, "Major blight influences never were removed. Heavy truck traffic, numerous bars, various industries—all these remain in what should have been entirely residential neighborhoods, so the areas are returning to what they were originally. Money, time and effort were essentially wasted."

Comments on the mortgage market weren't any more optimistic.

Interest rates are expected to continue up. Housing starts are expected to go down.

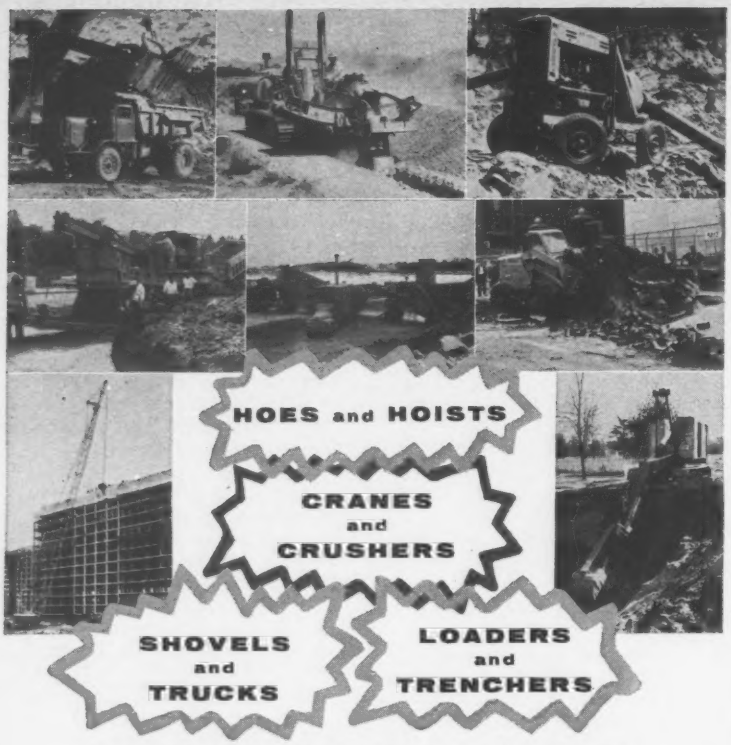
Starts are expected to drop during the remainder of the year, but the number is expected to be about 1.3 million for the year.

Next year's housing outlook is dimmer. Estimates of decline from 1959's total ranged from 5% to 15%. The low estimate was a rare exception.

The increase in the FHA mortgage interest rate is not expected to add much zip to that market. Discounts may ease, but probably not over 3%.

And although the new housing bill signed by the President allows lower down payments, the new schedules will not go into effect now, Julian H. Zimmerman, FHA commissioner, announced.

(B&F continued p. 98)



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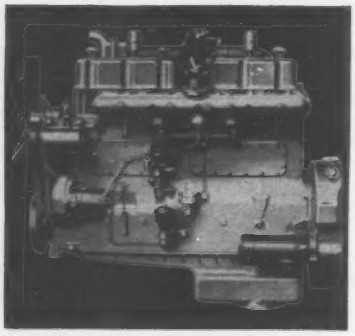
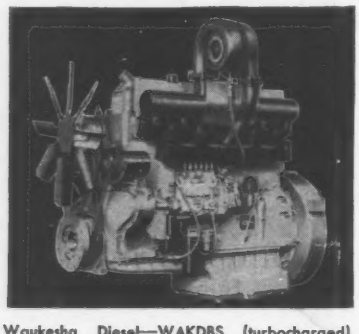


Waukesha gasoline engine—145-GZB—5⅜" x 6"; 817 cu. in.; 240 max. hp. Other models, 50 to 980 hp; bare engine or complete power units.



Waukesha Diesel—WAKDBS (turbocharged) 6¼" x 6½", 1197 cu. in., 400 max. hp. Other models, 50 to 1235 hp; bare engine or complete units; normal or turbocharged.

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN

NEW YORK TULSA LOS ANGELES

Factories—Waukesha, Wisconsin, and Clinton, Iowa 452

New Steel Source

Conversion of copper sla to bring steel to West

Steel manufactured out of copper sla may bring a new and cheaper sourc of construction materials to the South west and Rocky Mountain areas. Plan to carry out production have been an nounced by Webb & Knapp, New Yor City real estate development concer (ENR Sept. 24, p. 21).

Another benefit for construction mer The new method will allow construc tion of small, integrated steel plants in areas where high-grade ores are not available. Regions once dependent o imports for their steel production woul have a source nearby.

To carry out its plans, Webb & Knapp has formed the Webb & Knapp Strategic Corp. to construct and operate the first integrated steel plant in Ari zona. The mill site will be an aban doned copper smelter at Clarkdale, Ariz The company will build a second plan at Anaconda, Mont.

"The steel will be highly competitive in price with ordinary steel product in the Southwest," says William Zeck endorf, president of Webb & Knapp "Most of the steel will be marketed there. Anticipated savings will com from the use of relatively high-grad iron in the slag and the absence of min ing and transport costs."

The Clarkdale slag contains abou 33% iron, ½% copper and 2% zinc

The plant's initial capacity will be 500 tons of steel per day. This could be expanded to 1,000 tons. Product will include reinforcing bars, rods and light angles.

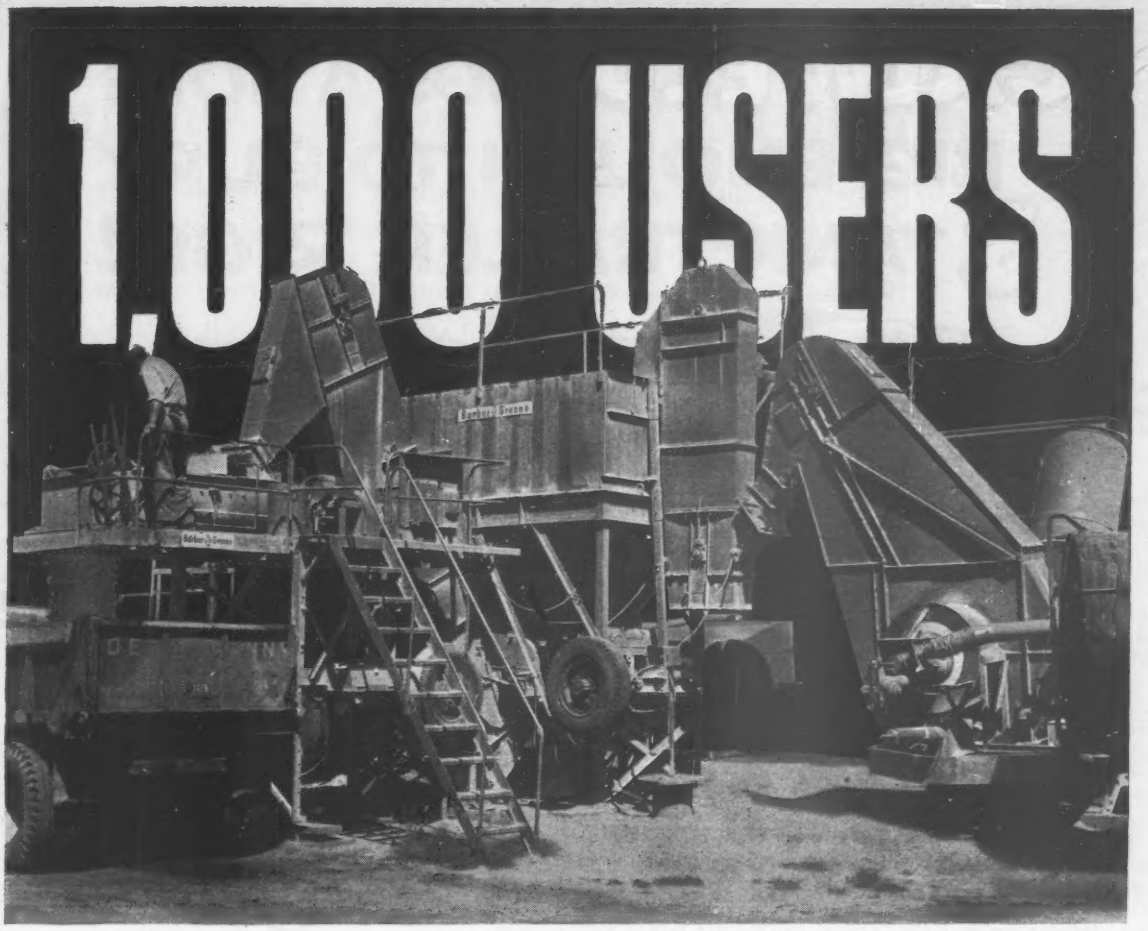
Koppers Co., Inc. is engineering the Clarkdale mill, which already has some facilities. It will cost $15 million.

At the Montana site, Webb & Knapp has purchased 40 million tons of slag from the Anaconda Co. Anaconda op erates an active copper mine and smelter there that will provide a continuing supply of slag.

The Montana plant, which will cost $20 million, is expected to be more effi cient than the one at Clarkdale. Hot slag can be received directly from the smelter, eliminating a step in the recov ery process. Completion date is 1963

Webb & Knapp is also negotiating with the Kennecott Copper Corp. and the Phelps Dodge Corp. to use Kennecott's slag pile at Salt Lake City and Phelps Dodge's at Douglas, Ariz.

The slag will be converted into steel through the Strategic-Udy Process, de veloped by Strategic Metals Corp., Buf falo, N. Y.



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For Flexibility—you can't beat the 840 Series. All units are mounted on pneumatic tires for fast truck towing. Jacklegs speed plant setup, eliminate need for cribbing. You move only the components required to meet mixing needs . . . cover the entire range from cold mix to high-type multiple-aggregate mixes. Write for bulletin.

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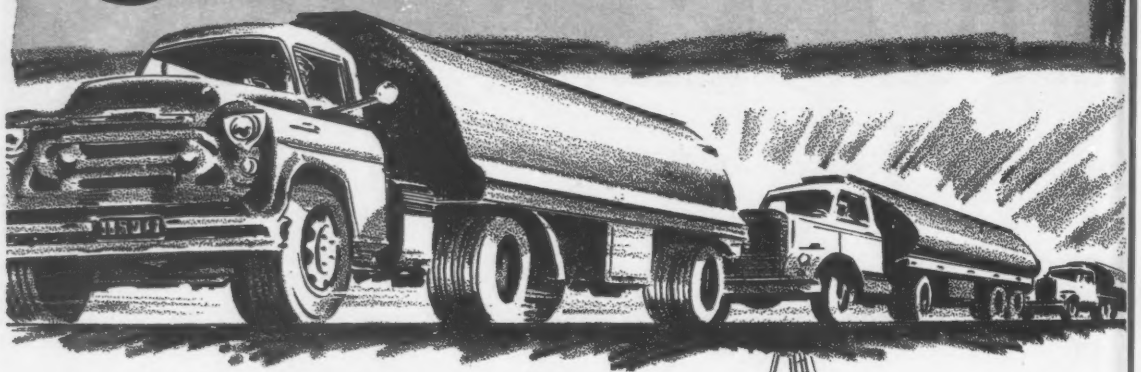

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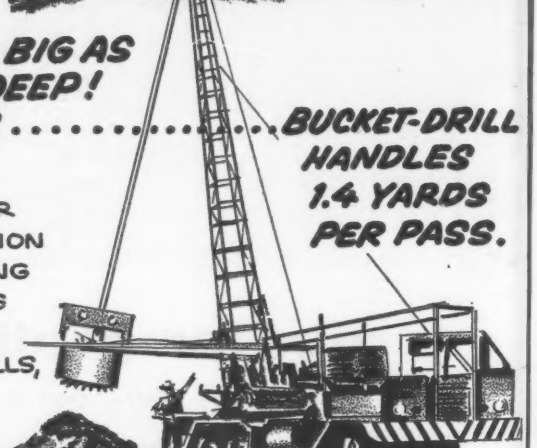

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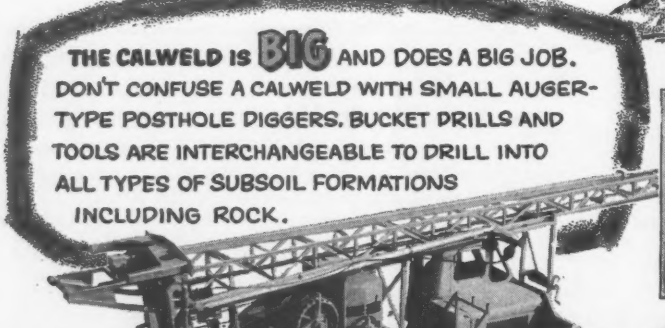

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Unions Agree on Arbitration

- **AFL-CIO adopts framework of new peace plan to settle interunion disputes, including those affecting construction by contract.**

- **The move is labor's most significant step since the merger. It will strengthen the AFL-CIO and bring some employer relief.**

AFL-CIO leaders have come up with a plan that President George Meany describes as the "final answer" to halt the competitive feuding between building trades and industrial unions.

With this first step, union conflicts over jurisdiction and jobs should begin to ease up, with corresponding relief to construction industry employers who have been the innocent victims.

The plan, which is basically a statement of principle, came out of AFL-CIO's Third Constitutional Convention in San Francisco. It went through the convention with only a single protest and with the backing of Richard J. Gray, president of the Building Trades Department, and Walter Reuther, head of the Industrial Union Department.

It developed because both sides agreed with Mr. Meany, who told the convention: "We just can't afford the dubious luxury of fighting with one another at a time when the situation calls for us to fight shoulder to shoulder against the common enemy."

And the only way to stop the fighting, unionists agreed, is to provide a "terminal point embodying final and binding arbitration" of all conflicts within the big labor federation.

The only protests were raised by the International Typographical Union, which has traditionally opposed arbitration. It has no intention of changing this policy.

Up to now the building trades have opposed arbitration over disputes with industrial unions. But, as Mr. Gray put it, "We've got to start settling these cases. And this may be the way out."

The AFL-CIO's arbitration goal is not a full turnabout for the building trades, who served notice at their special 1957 convention in Atlantic City that they would never submit their basic jurisdictional claims to arbitration. The plan has enough qualifications and, as Mr. Meany says, "a good many details and angles to it" to prevent violation of basic union rights.

Here is what the federation has agreed on so far:

- All interunion disputes will be settled by final and binding arbitration by a panel of "prominent and well-qualified persons."
- The panel will handle each dispute separately and the decisions will not affect other cases. The arbitration will "not apply to determination of the work or trade jurisdiction of affiliated unions."
- A special committee of the AFL-CIO Executive Council will develop a "detailed plan of procedure" for settling such disputes, with arbitration as the final point.
- A special AFL-CIO convention will be called next year, probably in September, to write the new rules into the federation's constitution.

Thus, the actual workings of the new agreement are at least a year away. And there are numerous pitfalls ahead.

For instance, O. A. "Jack" Knight, president of the Oil, Chemical and Atomic Workers, says he's "reserving judgment until I see how this thing works out." Mr. Knight's union has been embroiled in a fight with the AFL-CIO's Metal Trades Department over organizing and has complained that present jurisdictional machinery is ineffective.

Even the choice of an arbitration panel is likely to be difficult. One building trades officer has already advised that "we don't want a bunch of professors handling our disputes." The craft unions will support a plan for a three-man board, including one member from each union involved in the dispute.

A further problem, of course, is the scope of union conflicts and friction covered by the plan. The plan broadly covers jurisdictional and organizational disputes, and specifically embraces union raiding, disputes between the building trades and industrial unions over construction and maintenance work, union contract clauses that inhibit or prevent contracting out, boycotts of rival union products, disputes between metal trades and industrial unions and organizing ethics.

There are no indications, so far, as to what, if any, antistrike provisions are contemplated. Even if included in the final plan, such provisions may prove no more effective than those of the National Joint Board for the Settlement of Jurisdictional Disputes, which can't prevent strikes despite a strike ban and which can't act until a dispute has come into being.

A special Executive Council committee, which came up with the arbitration proposal, gets the task of writing the rules. It is headed by machinist president Al J. Hayes and includes Joseph Keenan, secretary of the International Brotherhood of Electrical Workers, Peter T. Schoemann, president of the United Association of Journeymen and Apprentices of the Plumbing and Pipe Fitting Industry, Walter Reuther, president of the United Auto Workers, Joseph Bierne, president of the Communications Workers, and William Schnitzler, secretary-treasurer of the AFL-CIO.

The committee's final disputes solution is expected to encompass machinery already working in the federation. This would include the no-raiding plans and such pacts as the Detroit agreement between the building trades and the United Auto Workers laying out construction jurisdiction in auto plants.

It is the intent of the committee that the necessary constitutional changes will not only authorize a settlement plan based on arbitration, but will also provide "meaningful sanctions for prompt enforcement."

The arbitration pact was only one of a series of moves by AFL-CIO leaders to "close ranks" against their outside problems. In backing the striking steelworkers with a multimillion-dollar defense fund, for example, the building trades—who have been feuding with the steelworkers—pledged a "full share" of the collections.

All members of the federation have been asked to contribute an hour's pay a month.

(Labor continued p. 102)

New Labor Law Breeds Confusion

The construction industry's hot-cargo exemption in the new labor law is not limited to on-site work. That part of the law does not mean what it says.

So says Sen. Pat McNamara (D., Mich.), who served as a member of the conference committee that approved the bill. His view has been written into the Congressional Record and becomes a part of the law's legislative history for the courts to consider in deciding what Congress intended.

If the Senator is right, the plumbers' fabrication clause is legal. That clause requires on-site fabrication of pipe under a certain size and allows off-site fabrication of pipe of another size only if fabricated in shops organized by the plumbers union. And labor contract clauses, such as the carpenters use, permitting workers to refuse to handle nonunion materials, may, in many cases, still be permissible. The exemption is obviously not limited to union-contractor agreements that forbid the awarding of nonunion subcontracts.

The exemption allows unions and contractors to put into their labor agreements restrictions on "the contracting or subcontracting of work to be done at the site" of construction.

Senator McNamara says the exemption "applies wherever the work involved could be performed at the construction site." Since "fabrication can be and generally is performed at the construction site," he continues, the plumbers' fabrication clause has the protection of the exemption, as does any other clause relating to work or fabrication that "could be done or performed at the job site."

This interpretation would extend the exemption to clauses restricting the use of nonunion materials, such as doors, windows and cabinets, and may be of some help to the sheet metal workers in their efforts to curb use of Burt Manufacturing Co. ventilators.

Other lawmakers have disagreed with Senator McNamara. House members of the conference committee have said the exemption does not apply to "supplies or other products or materials shipped or otherwise transported to and delivered on the site of the construction." Sen. John Kennedy (D., Mass.) told Congress the "proviso does not cover boycotts of goods manufactured in an industrial plant for installation at the job site, or suppliers who do not work at the job site."

Despite the confusion over what types of clauses are covered, the lawmakers have made it clear that clauses within the law are legal and are binding on contractors, at least to the extent of exposing a contractor to a damage suit in case of violations.

No one, has said how a union gets the clause in the first place, or how it enforces the clause after it gets it.

The consensus of lawmakers so far is that the exemption does not change the law as it stood before the new law was passed. This means a union cannot strike to make a contractor abide by the clause (the Sand Door case), or refuse to furnish men in an attempt to enforce the clause (the Detroit Edison case), or picket a common construction site to make the offending contractor honor the clause (the Denver Building Trades case).

Another factor that tends to make enforcement of the clause difficult if not impossible is the secondary boycott amendment, which forbids a union to "threaten, coerce, or restrain" an employer in an effort to make him quit doing business with anyone or to cease using any particular product. The hot-cargo exemption, the lawmakers say, is subject to this limitation.

If so, a union is also effectively told that it cannot strike to get such a clause during collective bargaining. Senator Kennedy and House members of the conference committee agree that the hot-cargo exemption does not change the law on "the legality of a strike to get such a contract."

AFL-CIO's George Meany, however, says if a union has the right to negotiate these clauses, then it has a right to strike to get them. Other unionists have admitted they don't know where they stand and have pointed to the Baltimore Building Trades case as some evidence that they perhaps cannot strike to get a restrictive clause.

Shock Treatment Won't Work

The construction industry's approach to the elimination of wasteful work practices won the tacit approval of industrial management representatives attending an American Management Association personnel conference on productivity in New York City last week.

Taking issue with industrialists who are trying to force corrective action through crash programs, conference participants generally subscribed to these views:

- **Management itself allowed wasteful work practices,** or antiproductivity factors, to take root during the "lush" periods and to flourish.
- **Labor, therefore, has a right to expect elimination of wasteful work practices through a gradual program rather than through shock treatments.**
- The orderly elimination of wasteful work practices requires a great deal of planning and education on the part of both labor and management.
- Productivity is a widely misunderstood and misused term that causes trouble and confusion when related to wage increases. It has little use in relation to wasteful work practices except in terms of "a full day's work for a full day's pay."

These views, which represent the current thinking of some of the top personnel men in industrial management, are essentially the same as those that inspired the construction industry's 10-point program, known as the "Ten Commandments," two years ago.

The 10-point program, which was developed through the joint efforts of the National Constructors Association and the AFL-CIO building trades unions, was designed to reduce unnecessary construction costs.

When it was adopted in February 1958, its framers realized it was not an "overnight cure" for the antiproductivity ills of the industry. They conceded it would take time to make the program effective and that the task of making it effective is the joint responsibility of labor and management. And they divorced the work practices problem from the problem of basic wage rate determinations, in the sense that the program does not affect basic wage rates.

That is essentially the same approach that the AMA conference participants recommended last week. Some were critical of the "shock treatment" now talked about by management in steel, copper, oil and railroads, for example, and suggested that gradual solutions to the problem should have been tried.

They suggested, too, that any efforts to improve productivity should extend from the bottom to the top and admitted that management is not immune to featherbedding charges. They emphasized the importance of top-level organization planning, good labor-management communications, proper supervision and mutual trust and respect in worker-management relations.

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.40 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.
SEND COPY TO: Official Proposal Division, Engineering News-Record Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

Bids: October 15, 1959.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, Public Buildings Law, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A. M., advanced standard time, which is nine-thirty o'clock A. M., eastern standard time, on the 15th day of October 1959, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1; G. L. NICKERSON, District Engineer, 353 Broadway, Albany 1, New York						
Albany and Saratoga (Int. Tour. Rte. 87)	FITS 59-14	Interstate Route 502 (Alb. to Clifton Park)FIC 57-12, FISH 57-17, FISH 58-3, FISH 57-16 and FISH 58-24 Project I-87-3(21)153	14.34	Traffic Signs & Delineators	$13,500 Plans $5	$244,000
Albany, Essex & Saratoga (Rtes. 29, 310, 28N & 32)	R.C. 59-141	Saratoga-Schuylerville, S.H. 244; Stillwater-Schuylerville, Pt. 2, S.H. 5230; Voorheesville-State Farm-Western Turnpike, Pt. 2, S.H. 1928 and Aiden Lair-Newcomb, Pt. 1, S.H. 5187	....	Clean. & Paint. 5 Bridges	$500 Plans $5	9,000
Essex (Rte. 9)	R.C. 59-144	Euba Mills-New Russia, S.H. 5117 New Russia-Elizabethtown, S.H. 5183	7.48	Asph. Conc. Pavt.	$18,000 Plans $5	329,000
Greene (Rte. 23A)	R.C. 59-137	Kaaterskill Clove, S.H. 5588	0.21	Asbestos Bonded Bin Type Retaining Wall	$19,000 Plans $5	344,000
Greene (Rtes. 23; 145 & 32)	FARC 59-128	Cairo-Windham, Pt. 1, S.H. 5233; Cooksburg-Cairo, Pt. 3, S.H. 8413; Cairo-Greenville, S.H. 8309; Cairo Hamlet, S.H. 954; South Cairo-Cairo, S.H. 887 and Saxton-Cairo, S.H. 9301. Project F-1159(1); F-567(4)	3.42 (0.40 Acc.)	9" Cem. Conc. Pavt., 2 @ 24' Var. Wide=2.46 Mi. Asph. Conc. Pavt.=1.36 Mi. Twin Bridge Comp. I-Beams, each 167.5', 2 Spas	$83,000 Plans $5	1,505,000
Saratoga (Int. Tour. Rte. 87)	FISH 59-18	Interstate Route 502 (Clifton Park to Malta) Including Access Work on S.H. 5519 & Various Town and County Roads. Project I-IG-87-3(20)169	7.47 (4.58 Acc.)	9" Cem. Conc. Pavt. 2 @ 36' Var. Wide=7.40 Mi. Misc. Work=0.07 Mi. (Acc.=2.03 Mi. Cem. Conc. Pavt.; 1.89 Mi. Asph. Conc. Pavt.; 0.44 Mi. Bit. S.T. Pavt. & 0.22 Mi. Misc. Work). 6 Hy Seps. Comp. Beams; 6 Sp. 343.3', 3 Sp. 127.8', 3 Sp. 136.3', 3 Sp. 130.1', 3 Sp. 126.1', & 5 Sp. 259.3'; 3 R.R. Seps. Comp. Beams; 3 Sp. 148.5', 3 Sp. 148.5', & 3 Sp. 141'	$478,000 Plans $10	8,725,000
DISTRICT No. 3; E. E. TOWLSON, Acting District Engineer, 333 E. Washington Street, Syracuse, New York						
Onondaga (Int. Tour. Rte. 81)	FISH 59-23M	Interstate Route 505 (Nedrow to Tully) FISH 56-11 & FISH 56-12. Project I-81-2(28)67	11.47	Misc. Work (Roadside Development Drainage, Fencing & Maint. Area)	$29,000 Plans $5	530,000
Oswego (Int. Tour. Rte. 81)	FISH 59-22	Interstate Route 505 (Parish to Jefferson County Line, Pt. 2) and Pulaski-Williamstown, Pt. 1, S.H. 1288 (Access Reconst.). Project I-IG-81-2(26)119	10.35 (4.93 Acc.)	Asph. Conc. Type 1A Pavt. (Main Line)=10.35 Mi. (Acc.=3.52 Mi. Asph. Conc. Type 1A=1.27 Mi. Bit. Mac. Type 1 & 0.14 Mi. Misc. Work); 9 Hy. Seps. Comp. I-Beams 121.5', 120.3', 298.5', 253', 131.3'; 129.7', 293.8', 215' & 219.6'; 1 RR Sep. I-Beam, 251.9'; 2 Brs. Comp. I-Beams210', & 210'; Br. R.C. Twin Box 41'	$398,000 Plans $10	7,056,000
DISTRICT No. 4; B. F. PERRY, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Genesee (Rtes. 5 & 33)	FAC 59-15 FARC 59-134	Batavia City: Main Street Arterial Highway (Summit St. To East City Line) Batavia-Stafford, Pt. 3, S.H. 5145A Project U-706(4), F-335(4)	1.53	Asph. Conc. Pavt.	$85,000 Plans $5	1,535,000
Livingston	FASS 59-21	Nunda-Dansville, Pt. 1 (County Road) Project S-501(2)	4.44	Bit. Mac. Rd. Mix (Asph. Emul.) Pavt.=4.38 Mi. Misc. Work=0.06 Mi.	$30,000 Plans $5	562,000
Ontario (Rte. 20C)	FARC 59-138	Bristol Valley, S.H. 188 Project S-551(1)	0.22	Asph. Conc. Type 1A Pavt.=0.19 Mi. Misc. Work=0.03 Mi.	$2,100 Plans $5	39,000
DISTRICT No. 5; E. G. H. YOUNGMANN, District Engineer, State Office Bldg., 65 Court Street, Buffalo 2, New York						
Chautauqua	FASS 59-23	Sinclairville: Railroad Street, County Road 49 Project S-553(1)	0.14	Bit. Surf. Treat. Pavt.=0.10 Mi. Misc. Work=0.04 Mi. Comp. I-Beam Bridge 78.3'	$7,500 Plans $5	140,000
Erie (Rte. 5)	FARC 59-89	Lake Shore-Lackawanna City, S.H. 5019 Project U-750(15)	0.68 (1.60 Acc.)	Asph. Conc. Type 2A Pavt.=0.90 Mi.; 9" Cem. Conc. Pavt. 2 @ 37' Var. Wide=1.38 Mi.; 2 Hy. Seps. Comp. I-Beams 160.5' & 160.5'; 2 Ped. Overpasses, Comp. I-Beams 124.5' & 129'; 1 Br. R.C. Twin Box 29.3'	$230,000 Plans $5	4,093,000
DISTRICT No. 6, JAMES H. THOMAS; District Engineer, State Office Bldg., 30 West Main Street, Hornell, New York						
Allegany (Rtes. 17 & 21)	FARC 59-111	Andover Village, S.H. 5419; Andover-Alfred Station-Almond, S.H. 5512 Project F-589(7)	1.49	Asph. Conc. Pavt.=1.38 Mi.; Misc. Work=0.11 Mi. Prestressed Conc. Bridge 72' Sp. Twin R.C. Box Bridge 53.3 Sp.	$40,000 Plans $5	736,000
Chemung (Rtes. 13, 17 & 223)	FATS 59-15	Horseheads-Cayuta, Pt. 1, FASH 59-7; Horseheads-Cayuta, S.H. 5432A, Erin-Horseheads, S.H. 356, Elmira-Horseheads Connection, Pt. 2, FASH 54-15 & Horseheads Village, FASH 53-5. Project U-221(12); U-560(9)	....	Traffic Signs & Delineators	$1,100 Plans $5	21,000
Chemung (Rtes. 17 & 13)	FATC 59-5	Elmira-Horseheads Connection, Pt. 2, FASH 54-15 Horseheads-Cayuta, Pt. 1, FASH 59-7 Project U-221(11), U-560(8)	....	Furnish. & Install. Traffic Control Devices at 3 Intersections	$800 Plans $5	15,000
Steuben	FASS 59-22	Purdy Creek-Shovel Hollow County Road 28 Project S-541(1)	0.61	Asph. Conc. Pavt.	$7,000 Plans $5	120,000
Yates (Rte. 245)	FARC 59-132	Middlesex-Rushville, S.H. 1772 Project S-114(2)	4.00	Asph. Conc. Pavt. Minor Repairs of 3 Bridges	$42,000 Plans $5	757,000
DISTRICT No. 7; ROBERT W. SWEET, District Engineer, 444 Van Duzee Street, Watertown, New York						
Clinton (Rte. 3, 22 Int. Tour. Rte. 87)	FITS 59-16	Interstate Route 502 Section 7B-2 (Route 3, to Cumberland Head Road) Project I-87-4(12)310	3.54	Traffic Signs and Delineators	$4,000 Plans $5	67,000
Franklin (Rte. 95)	FARC 59-126	Moira-Bombay, S.H. 885 Hogansburg-Bombay, S.H. 820 Project S-499(2)	8.82	Asph. Conc. Type 1A Pavt.=8.80 Mi. Misc. Work=0.02 Mi.	$77,000 Plans $5	1,391,000
Franklin & St. Lawrence (Rte. 37)	FARC 59-100	Massena-Helena, Pt. 1, S.H. 1261; Raquette River-Hogansburg, Pt. 1, S.H. 1861 & Raquette River-Hogansburg, Pt. 2, St. Regis Indian Reservation-Fort Covington, Pt. 1, S.H. 8396. Project F-580(15)	5.07	Asph. Conc. Type 1A Pavt.=5.03 Mi.;Misc. Work=0.04 Mi.; 2 Hy. Seps. Comp. I-Beams 166.5' & 167.5'; 1 RR Sep. Comp. I-Beam Twin 2 Sp. 160' Each; 1 Br. Deck Girder Cant. Type Twin 5 Sp. 710' Each	$290,000 Plans $10	5,250,000
Jefferson (Int. Tour. Rte. 81)	FISH 59-19	Interstate Route 505, Section 7AB-1 (Jeff. Co. Line to S.H. 184). Project I-81-3(10)130	4.60 (5.81 Acc.)	Asph. Conc. Type 1A Pavt. (Main Line)=4.60 Mi. (Acc.=5.37 Mi. Asph. Conc. Type 1A Pavt. & 0.44 Mi. Gr. Grav. B.D.S.T. Pavt.) 3 Hy. Seps. Comp. W.F. Beams 6 Sp. 441', 4 Sp. 320' & 5 Sp. 297.5' 2 Brs. Reinf. Conc. Boxes 20' & 21'	$260,000 Plans $10	4,383,000
Jefferson (Int. Tour. Rte. 81)	FISH 59-21	Interstate Route 505 (Rift Bridge Approach) Project I-81-3(14)183	0.24	Asph. Conc. Type 1A Pavt.	$11,000 Plans $5	194,000

(Continued on the following page)

(Continued from preceding page)

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 8, KURT G. RAUER, District Engineer, Pleasant Valley Road, Poughkeepsie, New York						
Columbia	R.C. 59-139	Various Highways on Rtes. 9, 9H, 398, 22, 23, 66, 295 & 20	....	Tree Removal	$400 Plans $5	7,000
Putnam (Rtes. 216, 6 & 22)	R.C. 59-145	Kent-Towner, S.H. 798; Carmel-Mahopac, S.H. 1221; Croton Falls-Brewster, Pt. 2, S.H. 5438	1.32	Replacing Guide Railing	$900 Plans $5	16,000
Rockland	R.C. 59-140	Various Highways on Rtes. 9W, 340, 304, 45, 202, 59, 306 and 210	....	Tree Removal	$450 Plans $5	8,000
Ulster (Rtes. 28, 32, 209 Int. Tour. Rte. 587)	FITS 59-17	Interstate Route Connection 530 (Thruway Access at Rte. 28 to Albany Ave. & Broadway Kingston & S.H. 5173, S.T. 58-1, FISH 58-14 Project I-587-2(19), U-1009(4)	1.39	Traffic Signs and Delineators	$4,500 Plans $5	77,000
Westchester (Int. Tour. Rte. 487) (N.Y. 120 & 120A)	FITS 59-13	Interstate Route Connection 520 Cross Westchester Expressway (White Plains & Rye Sections) FICWE 56-1 & FICWE 57-1. Project I-487-2(17)22	7.47 (19.48 Acc.)	Traffic Signs and Delineators	$20,000 Plans $5	362,000
Westchester (Rte. 120)	R.C. 59-146	Crystal Springs-Chappaqua-Millwood, S.H. 1015	0.06	Relocation of R.C. Pipe Culvert	$1,000 Plans $5	18,000
DISTRICT No. 9, J. C. FREDRICK, District Engineer, 71 Frederick Street, Binghamton, New York						
Broome, Delaware & Otsego (Rtes. 17, 79, 26, 7B & 23)	R.C. 59-142	Windsor-Deposit, S.H. 5338; Chenango Forks-Whitney Point, S.H. 8209; Vestal-Vestal Center-Choconut, S.H. 8331; Franklin-North Franklin, S.H. 8288 and Davenport Center-Oneonta, S.H. 5455	....	Clean. & Paint. 5 Bridges	$450 Plans $5	8,000
Delaware (Rte. 97)	R.C. 59-143	Hancock-Long Eddy, Pt. 1, S.H. 5671	0.08	Bridge Repairs (Sidewalk & Curb Removal & Replacement)	$400 Plans $5	7,000
Chenango (Rte. 23)	FARC 59-106 R.C. 59-107	Norwich-South New Berlin, Pt. 1, S.H. 596; Norwich-South New Berlin, Pt. 2, & South New Berlin-New Berlin, Pt. 1, S.H. 1394. Project F-620(10)	4.16	Asph. Conc. Pavt. = 4.10 Mi. Misc. Work = 0.06 Mi. Rehabilitation of Exist. I-Beam Bridge	$42,000 Plans $5	765,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN

SUPT. OF PUBLIC WORKS

Bids: October 21, 1959.

Refuse Incinerator Plant for the Town of Eastchester, Westchester County, New York

NOTICE TO BIDDERS

NOTICE IS HEREBY GIVEN that the Town Board of the Town of Eastchester, Westchester County, New York will receive separate sealed bids for the

BUILDING CONSTRUCTION
CONTRACT NO. 1
FURNACES & EQUIPMENT
CONTRACT NO. 2
HEATING SYSTEM
CONTRACT NO. 3
PLUMBING SYSTEM
CONTRACT NO. 4
ELECTRICAL SYSTEM
CONTRACT NO. 5
CHIMNEY
CONTRACT NO. 6

for the construction of a building and appurtenant structures, complete with site improvements, for the new refuse incinerator.

Bids will be received by the Town Board at the Town Offices, 40 Mill Road, Eastchester, Westchester County, N. Y., until 8:00 o'clock P.M., Eastern Daylight Saving Time, October 21, 1959, and then at said place publicly opened and read aloud.

The Information for Bidders, Form of Bid, Form of Contract, Plans, Specifications and Form of Performance Bond may be examined at the office of the Town Clerk, 40 Mill Road, Eastchester, N. Y., or the office of the Consulting Engineer, and copies thereof may be obtained upon payment of Twenty-five ($25.00) Dollars for each set. Any bidder, upon returning such set in good condition within thirty (30) days after the award of contract or rejection of bids, will be refunded his full payment, and any non-bidder upon so returning such set in good condition within the same period of time will be refunded Ten ($10.00) Dollars. Checks given as deposit on plans and specifications shall be made payable to the Town of Eastchester.

In general, the work included in Contract No. 1 consists of the construction of a building and appurtenant structures, complete with site improvements, for a new refuse incinerator plant of 200 tons per day capacity. Contract No. 2 covers the installation of furnaces and mechanical equipment. The heating, plumbing and electrical installations are to be executed under Contracts 3, 4 and 5 respectively, and the erection of the chimney under Contract No. 6.

Each bidder must deposit with his bid, an amount of not less than Five (5%) percent of the base bid in the form of cash or a certified check, (bid bonds will not be accepted in lieu thereof) subject to the conditions provided in the Information for Bidders. In addition, a Consent of Surety, signed by an acceptable Corporate Surety Company, shall be executed in the form accompanying the bid.

The Contractor will be required to comply with all provisions of the Labor Laws of the State of New York.

Contractor will be required to provide a performance and payment bond (100% of the accepted bid), property damage and public liability insurance with the provision to hold the Town of Eastchester harmless for any accidents occurring during the construction period.

All bids must be submitted in exact conformity with the "Form of Bid" in the Specifications. Bids must be submitted in sealed envelopes, bearing on the outside, the name of bidder, his address, the name of project, and the Contract bid upon.

The Town of Eastchester, Westchester County, New York, reserves the right to reject any or all bids, waive any informalities, or to accept that bid, acceptance of which will, in the judgment of the Town Board, best secure the public interest and efficient work.

No bidder may withdraw his bid within Forty-five (45) days after the date of opening thereof.

BY ORDER OF THE TOWN BOARD OF THE TOWN OF EASTCHESTER
Arthur N. Ferris, Town Clerk

William Raisch
Consulting Engineer
61 Hilton Avenue
Garden City, L. I., N. Y.
DATE, Eastchester, N. Y.
September 23, 1959.

Bids: November 10, 1959

E. Seven Mile Relief Sewer Outer Drive to Conant Sections I and II Department of Public Works City of Detroit, Michigan

ADVERTISEMENT
CONTRACTS PW-3030 AND PW-3031

Sealed proposals for a sewer located in East Seven Mile Road, from Outer Drive to Conant, will be received at the Office of the City Engineer, 528 City-County Building, Detroit 26, Michigan until 2:00 P.M. Detroit Time, November 10, 1959, and then at such place and time publicly opened and read aloud.

The work is separated into two Contracts, namely PW-3030 and PW-3031. Bidders may submit a separate bid on each Contract or may submit a combined bid on both Contracts. Both Contracts are to be constructed concurrently even though both may be awarded to the same bidder.

The work included in Contract PW-3030, Section I, consists of approximately 0.71 miles of 13'-0" and 0.73 miles of 11'-6" inside diameter concrete sewers, to be constructed in tunnel in East Seven Mile Road from Outer Drive to Mound Road. This Contract also includes reconstruction of a reinforced concrete Bellmouth junction chamber and connections between this proposed sewer and the existing sewer in East Seven Mile Road.

The work included in Contract PW-3031, Section II, consists of approximately 0.76 miles of 11'-6" and 0.76 miles of 9'-0" inside diameter concrete sewers to be constructed in tunnel in East Seven Mile Road from Mound Road to Conant Avenue. This Contract also includes connections between this proposed sewer and the existing sewer in East Seven Mile Road.

The Bidding Documents which must be used in submitting a proposal may be examined at the Office of the City Engineer during regular business hours, and copies may be obtained upon deposit of $25.00 per set, which deposit will be refunded upon the return of the Bidding Documents in good condition within 10 days after the date for opening of bids or if used in submitting a proposal.

Each proposal must be accompanied by a certified check, bank draft, or a satisfactory surety bid bond in an amount not less than 5 percent of the total bid price as guarantee and security for the acceptance of the Contract.

Checks shall be made payable to the Treasurer, City of Detroit.

No proposal once submitted may be withdrawn for at least 45 days after the actual opening of the bids. The City of Detroit reserves the right to waive any irregularity in any bid, or to reject any or all bids, should it be deemed for its best interest.

CITY OF DETROIT
GLENN C. RICHARDS
Commissioner of Public Works

M. F. WAGNITZ
City Engineer

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5244) will be received at Weslaco, Texas, until 10 a.m., Central Standard Time, October 29, 1959, for furnishing labor and materials for Installation of Natural Gas Engines in River Pumping Plants No. 2 and 3, Mercedes Division, Texas, Lower Rio Grande Rehabilitation Project. Location near Mercedes, Texas. Principal items are, Lump Sum—Installing and testing three 900-Hp natural gas engines with auxiliaries and chain drives in River Plants No. 2 and 3; Lump Sum—Furnishing and installing 3 pump shaft extensions with flexible couplings, pillow blocks and thrust collars; Lump Sum—Removing two cross compound steam engines with piping and auxiliaries from Plant No. 3; Lump Sum—Removing one steam turbine with piping and auxiliaries and one gear reducer from Plant No. 2; and other work. Completion time 275 days. For particulars, address Bureau of Reclamation, P. O. Box 1609, Amarillo, Texas; P. O. Box 357, Weslaco, Texas; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

Department of Commerce, Bureau of Public Roads, September 15, 1959. SEALED BIDS will be received at the office of E. L. Tarwater, Division Engineer, Bureau of Public Roads, 1554 Columbia Pike, Arlington 4, Virginia, until 11:00 a.m., D.S.T., OCTOBER 13, 1959, for Project 1A14, George Washington Memorial Parkway, Fairfax County, Virginia. Grading, draining and other work from Vicinity of C.I.A. Building 1.787 miles to the Washington Circumferential Highway. The approximate quantities of the more important items are: 60 acres Clearing and Grubbing, 492,200 cu. yd. Excavation, 550 cu. yd. Concrete, and 11,000 lin. ft. Concrete Culvert Pipe. Minimum wage rates have been fixed as required by law. Plans, specifications and bid forms are available upon request at the address given above. F. W. Cron, Regional Engineer.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5242) will be received at Stockton, Kansas, until 10 a.m., Central Standard Time, November 5, 1959, for furnishing labor and materials for earthwork and structures, Osborne Canal, Section 1069+64.4 to Station 1719+90, and laterals and drains, Webster Unit, Kansas, Missouri River Basin Project. Location near Osborne, Kansas. Principal items are 326,000 cu. yds. excavation; 1,140 cu. yds. concrete in structures; 18,524 lin. ft. concrete pipe, 12 to 60-inch; and other work. Completion time 510 days. For particulars, address Bureau of Raclamation, P. O. Box 841, Stockton, Kansas; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

OFFICIAL PROPOSALS

Bids: October 8, 1959

Soil Explorations & Foundation Investigations

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 a.m. Advanced Standard Time on October 8, 1959, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON CLOVE LAKES EXPRESSWAY—SECTION 2, VICTORY BOULEVARD TO SLOSSON AVENUE, INTERSTATE ROUTE 512, PROJECT I-278-1(4)1, ITEM NUMBER 28B, RICHMOND COUNTY, WHICH CONSTITUTES CONTRACT SPEC. NO. FA-SM-145.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, N. Y.
(b) Mr. M. E. Goul, District Engineer, New York State Department of Public Works, 325 West Main Street, Babylon, Long Island, New York.
(c) Mr. William Mende, Principal Building Construction, Engineer Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50 percent of deposit.
The Engineer's Estimate of cost for this work is $17,400.00.
Proposal for this contract must be submitted in separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $1,000.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders".
The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPERINTENDENT OF
PUBLIC WORKS

Bids: October, 1959

230 Kv Bangkok Transmission Tie Lines

Kingdom of Thailand
Royal Irrigation Department
Bangkok, Thailand
INVITATION FOR BIDS—NO. YSC-3-1

The Royal Irrigation Department of the Kingdom of Thailand hereby invites sealed written bids for furnishing, transporting, handling, constructing, and erecting of 230-kv single circuit and double circuit transmission lines in and in the vicinity of Bangkok, Thailand, for the 230-kv Transmission System, Yanhee Multipurpose Project, Kingdom of Thailand, in accordance with the Contract Documents, Invitation for Bids No. YSC-3-1. A brief description of the work is as follows:

Perform the complete construction, erection, and furnishing of all materials for approximately 18.5 kilometers (11.5 miles) of single circuit transmission line, 13.1 kilometers (8.1 miles) of double circuit transmission line with only one circuit installed, and 4.4 kilometers (2.8 miles) of double circuit transmission line with both circuits installed. The Contractor will be required to design and furnish 230-kv steel single circuit and 230-kv steel double circuit transmission line towers, and to furnish 1,272,000 circular mil ACSR conductor (42/7 strand), 9.525 millimeters (⅜ inch) extra high strength steel overhead ground wire (7 strand), conductor and ground wire accessories, transmission line insulators and insulator hardware, and tower grounding materials.

Invitations for Bids will be issued in early October, 1959. It is the intention to include in this invitation, by supplemental notice, 270 miles of double circuit 230-kv transmission line from Bangkok to Bhumiphol Power Plant if survey data is complete in time. If time does not permit this action, a second invitation will be issued for this double circuit line on the same basis as for the Bangkok Tie Lines, that is, on a furnish and install basis. Copies of Contract Documents, Invitation for Bids—YSC-3-1, may be obtained by qualified Bidders on written request on Bidder's letterhead, addressed to:

Royal Irrigation Department
Attention: Thai Liaison Engineer
c/o Engineering Consultants, Inc.
1940 West Mississippi Avenue
Denver 23, Colorado

Each request must be accompanied by a check or money order, payable to the Royal Irrigation Department, in the amount of U. S. $10.00 for each copy of the Contract Documents requested. The remittance is non-returnable.

M. L. Xujati Kambhu
Director General
Royal Irrigation Department
Kingdom of Thailand
Bangkok, Thailand

READ THE OFFICIAL
PROPOSAL COLUMN OF
ENGINEERING NEWS-RECORD
THIS WEEK AND EVERY WEEK

OFFICIAL PROPOSALS

Bids: October 27, 1959.

Furnishing and Installation of Steel Bulkhead, Batter Piles and Wales

OFFICIAL NOTICE

Sealed bids will be received at this office until 10 A.M. Tuesday, October 27, 1959 for the furnishing and installation of steel bulkhead, batter piles and wales as per plans and specifications.

Approximate quantities:
630 tons of steel bulkhead
130 tons of steel batter piles
40 tons of steel wales
11,000 cubic yards of dredging

Location:
McKinley Beach Park
N. Lincoln Memorial Drive at Lafayette Place entrance
Milwaukee, Wisconsin

Specifications and plans are available at the Milwaukee County Regional Planning Department, Room 303-B, Courthouse. Plan deposit of $25 is required for each set of plans and specifications taken from the office. This deposit will be refunded upon the return of plans and specifications in good condition not later than five days after bidding.

Milwaukee County approved minimum wage rates on file in office of County Clerk shall apply.

Proposals shall be given only to those contractors on the Milwaukee County approved qualified bidders list in accordance with the County ordinance applicable.

MILWAUKEE COUNTY PARK
COMMISSION,
HOWARD W. GREGG,
GENERAL MANAGER

Bids: October 22, 1959.

For Construction of Niagara Parkway Viaduct Section Cleveland Avenue to Bellevue Avenue, Niagara Falls, Niagara County, New York

POWER AUTHORITY OF THE STATE OF NEW YORK
ADVERTISEMENT FOR PROPOSALS
SPECIFICATIONS NO. 627.02
NIAGARA CONTRACT NO. N-16

NOTICE TO CONTRACTORS: The Power Authority of the State of New York will receive sealed proposals for the Construction of Niagara Parkway Viaduct Section, Cleveland Avenue to Bellevue Avenue, located in Niagara Falls, Niagara County, New York, until 10:30 A.M. Eastern Daylight Saving Time on the 22nd day of October, 1959 at the Authority's Office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The principal items of work are:

Estimated:

43,500 cubic yards	Excavation
7,741 cubic yards	Concrete
2,420 linear feet	Reinforced Concrete Culvert Pipe, 12" to 42" Dia.
1,836,000 pounds	Bar Reinforcement for Structures
4,340,000 pounds	Structural Steel
5,240 linear feet	Metal Railing

The work shall be completed on or before May 15, 1961.

Plans, Specifications and Proposal Forms for the work, may be obtained from the Power Authority of the State of New York, at the Coliseum Tower, 18th Floor, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten ($10.00) Dollars per initial set of contract documents, and Five ($5.00) Dollars per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file at Authority's New York office and the Authority's field office, 2640 Main Street, Niagara Falls, New York, and in the offices of the Engineer, Clarke and Rapuano, 830 Third Avenue, New York 22, New York, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the gross sum price bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

AN AUCTION

CONSTRUCTION EQUIPMENT

Friday, Oct 16th, WILMINGTON, OHIO, 9 AM (EST). A very large sale, every piece belongs to D. W. Winkelman Co., Inc. Write—Wire auctioneers for full sale bill. EACH PIECE POSITIVELY SELLS—NO-BID-INS-NO-BUY-BACKS-NO MINIMUM-PRICES!

2 Cat D9's; 5 Cat D8's 15A & 14A's w/dozers; Cat D8, 13A w/hyd dozer; 7 Cat D8's; 2U's all w/dozers; 8 IHC TD-24's, 2 are 241 series, one w/dozer; Cat D7 & 2 Cat D6's & Cat D4 all w/dozers; P&H 955A dragline 2½ yd, Waukesha diesel, 100' boom; 955A shovel front; Lorain 820J drag, 70' boom, Waukesha diesel; Lorain L80 drag, 70' boom, Cat D13000; 820J shovel front & L80 or 820J backhoe attchmt; Lorain L50-I drag, 60' boom, Cat D318; L50 backhoe attchmt; NW 25 trk-crane, 65' boom, 15' jib; 3 Lima 34's, one backhoe & 2 draglines, Cat D318 or GMC 371; Concrete, clam & drag buckets; LeT-W 'D' Roadster; LeT 'D' Tournapull; 3 Euclid S-18 Motor Scrapers, GMC 6-110's; LeT-W 'C' Roadster; LeT 'C' Tournapull; 6 Cat DW-21 Motor Scrapers, 8W's; 3 LeT 'B' Tournapulls, Cummins 300 hp engines.

8 Cat #12 motor graders, all 8T's, hyd steer & scarifiers; 3 Adams 440 motor graders, hyd steer, scarifiers, cabs, less than 1000 hours; Michigan 175 AD loader; Trojan 103 Loadster; AC HD-11G tractor loader; IHC 1-350 w/Pippin backhoe & Loader; 3 LeT 'FP' Scrapers; Parsons 220-2A & Buckeye 12 trenchers; 4 LeT-W & Gebhard 60x60 and other sheepfoots; LeT 'C' Tractor w/hitch & LeT-W 60x60 sheepfoot; Ferguson 50 ton pneu roller; Ferguson 3 & 3-5 ton tandem, Huber & Gallon 10 ton 3 wheel & B-S 10-12 ton 3 wheel rollers; Jackson & 4 International VT6-4 Vibro tampers; C-P 900 cfm rotary, 2 I.R. 210 cfm Gyro's & other compressors; 5 Rome tandem discs; Fleco tree dozer & Fleco rock rake for D8's; Rogers 25KW generator w/Cummins diesel, 27' folding tower; 2 Schoonmaker 30 KW lite plants & towers; IHC 25KW generator & tower; smaller generators & plants; Buckeye FG-24 Fine-grader; Maxon Dumpcrete spreader; Jaeger X Transverse Finisher; Flex-Plane float-finisher, quick change; Ferguson #25 Vibrator; Clary power screed; Foote 34E dual drum paver; Flex-Plane hyd transverse finisher; vib screeds; Flex-Plane automatic & 2 other spray machines; Clipper AC-40 joint sealer; Koehring 56S stationary elec 2 yd horiz mixer; BG car unloader; 24"x54' conveyor; 6 Gar-Bro concrete power buggies; much other concrete equip; 2 Jersey spreaders; Euclid 6000 gal water wagon & Euc 25FDT tractor; water trailers & water trucks, Fuel trucks, 39 trucks & pickups; John 30 ton tandem & Rogers 20 ton lowboys; 32' tandem float; Office & van trailers; Thurman portable 40 ton truck scales; pumps.

GE & Motorola 150 Watt Radio base stations; 5 GE & 18 Motorola mobile trans-receivers; LeT K30 & Cat 28 rippers; DelMag D-12 pile hammer; McCarthy 106-24 vertical earth drill on FWD; welders; air tools; portable 40x60 steel shop bldg; Parts; shop tools; many pieces too numerous to list.

Write-Wire auctioneers for full sale bill. TERMS: 1/3rd down sale day on pieces over $2,000.00 and up to 2 years to pay. Remember, Each Piece Positively Sells!

D. W. WINKELMAN CO. INC.
Owner

FORKE BROTHERS
the Auctioneers
321 Sharp Bldg. **Lincoln, Nebraska** Phone 2-1045
— EQUIPMENT AUCTION LEADERSHIP SINCE 1921 —

OFFICIAL PROPOSALS

Bids: October 13, 1959

Port Authority Building Alteration to Conference, Test & Training Rooms

THE PORT OF NEW YORK AUTHORITY
CONTRACT EXD-120.073

Sealed proposals for the supplementary heating for conference, test and training rooms will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, October 13, 1959, at which time said proposals will be opened and read in Room No. 1108.

Contract Documents may be seen at the office of the Assistant Chief Engineer for Design of the Authority, Room 1115, and copies will be furnished upon request. No deposit will be required but the documents shall be returned in good condition not later than forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, October 1, 1959

Bids: Prequalification: October 15, 1959.
Bids: November 1959

Feeder Road Program Ministry of Public Works Republic of El Salvador

Bids: November 1959
Prequalification: October 15, 1959
Prequalification Questionnaire
NOTICE TO CONTRACTORS

The Ministry of Public Works of the Republic of El Salvador advises that during the month of November, 1959, the first bidding will take place for the construction of a major portion of the proposed Feeder Road Program of the Country. The Specifications, Plans and Contract Documents will be available for sale in El Salvador on September 21, 1959.

All Contractors interested in taking part in this bidding and in future biddings are requested to obtain copies of the Prequalification Questionnaire which is available in the Office of the Proveedor Especifico de Obras Publicas, Edificio Morazan, 8ª C. P., San Salvador, El Salvador, C. A. These questionnaires must be completed and returned to the Proveedor not later than October 15, 1959.

MINISTRY OF PUBLIC WORKS
REPUBLIC OF EL SALVADOR
C. A.

Bids: October 15, 1959.

Construction of the 345Kv Transmission Line Between Rochester Substation and Syracuse Substation From Monroe County to Onondaga County, New York

POWER AUTHORITY OF THE STATE OF NEW YORK
NIAGARA-ADIRONDACK TIE LINE
ADVERTISEMENT FOR PROPOSALS
SPECIFICATION NO. PA-9-3
CONTRACT NO. AL-3

NOTICE TO CONTRACTORS: The Power Authority of the State of New York will receive sealed proposals for the Construction of the 345KV Transmission Line Between the Rochester Substation and the Syracuse Substation, From Monroe County to Onondaga County, New York, until 10:30 A.M. Eastern Daylight Saving Time, on the 15th Day of October, 1959, at the Authority's Office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The principal items of work are estimated as follows:

Clearing Right of Way	300 Acres
Chemical Treatment of Right of Way	400 Acres
Erection of Steel Tower Structures and Grillages	3200 Tons
Stringing Bundled Conductors and Ground Wire	75 Miles

The major items of material will be furnished by the Authority.

The construction of the Transmission Line shall be completed on or before July 1, 1961.

Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, at the Coliseum Tower, 18th Floor, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten Dollars ($10.00) per initial set of contract documents, and Five Dollars ($5.00) per set for additional sets, no part of which shall be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office and in the Offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: November 21, 1959

Construction of Kut-Nasiriyah Road

REPUBLIC OF IRAQ
MINISTRY OF COMMUNICATION
KUT - NASIRIYAH ROAD

1. Contract R/29 (1959)
   Section Kut - Tisain
   From KM 0 to KM 60.8
2. Contract R/30 (1959)
   Section Tisain - Nasir
   From KM 60.8 to KM 120.1
3. Contract R/31 (1959)
   Section Nasir - Nasiriyah
   From KM 120.1 to KM 176.2

The Ministry of Communications invite tenders from experienced highway Engineering Firms and Contractors, who have carried out works of similar quality and quantity, for the construction of the Kut-Nasiriyah Road from Kut to Nasiriyah under three contracts of approx. 60 Kilometers in length each.

The work consists of the construction of asphaltic concrete pavement on gravel foundations, earth work, culverts, bridges and all other incidental work which may be required.

Full details and tender documents may be inspected at the Embassy of the Republic of Iraq in Washington, D. C., 2135 Wyoming Avenue N.W.

Contractors may tender for one, two or three contracts separately.

Tenders must be submitted separately for each contract in English, to the Ministry of Communication, Directorate General Roads & Bridges, Baghdad, Iraq, on or before 12 noon local time November 21st 1959.

Minister of Communication.

EMPLOYMENT NATIONAL COVERAGE OPPORTUNITIES

DISPLAYED RATE:

The advertising rate is $39.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

UNDISPLAYED RATE:

$2.40 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take ½ of above rate.

Box numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to agency Commission.

Send NEW Ads and Inquiries to Classified Advertising Division or ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36.

SUPERINTENDENT WANTED

Metropolitan New York Contractor doing large Public Works Projects needs Superintendent thoroughly familiar with Heavy Construction work, Roads and Bridges. Man with New York City experience preferred, but not necessary. We are ready to pay TOP SALARY for a Superintendent who can: TAKE CHARGE, THINK, PLAN and EXECUTE, and who is COST-CONSCIOUS. Great opportunity for man who is looking for long time employment in New York City area.

P-2694, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

ADDRESS BOX NO. REPLIES TO: Box. No.
Classified Adv. Div. of this publication.
Send to office nearest you.
NEW YORK 36: P. O. BOX 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

• POSITIONS VACANT

Construction Superintendents—Graduate Engineers under 45. Experience in large earthmoving operations—highway, airport and dams—on production basis. Permanent position growing company in Southeast. Submit detailed resume experience, references, availability, salary desired, personal data to P.O. Box 2611, Montgomery, Alabama.

Engineer, versed in design and practical application of form work for reinforced concrete buildings, principally open centering for pan construction. Location southeast. Advise education, experience, references, availability and salary expected. P-2609, Engineering News-Record.

Erection Manager—Excellent opportunity— Middle-Atlantic structural steel fabricator. Send resume, references and salary requirements to P-2631, Engineering News-Record.

Highway Construction Superintendent, capable of handling road & bridge work, range of $3 to 6 million dollars, area New England & Eastern New York State. Send resume, qualifications, & salary requirements to P-2673, Engineering News-Record.

Mechanical Engineers—One fully experienced in all phases of pipe fabrication for Heating, Air Conditioning and Process Piping—One—Sales Promotion Engineer for Industrial installations. Permanent positions with large Kentucky Mechanical Contractor. Send complete resume of education, experience and salary requirements. P-2626, Engineering News-Record.

Wanted—Reinforcing Steel Detailer to learn bar estimating and become part of the Sales-Estimating Department of growing Fabricator. Excellent opportunity for smart, aggressive man. Good starting salary plus usual benefits. P-2513, Engineering News-Record.

Highway Design Engineer—Soils. Engineering background. Minimum 3 years experience. Permanent position Southern Connecticut. Send resume of experience, references and salary requirements. P-2562, Engineering News-Record.

Town Engineer with experience in sewerage and sewage treatment, water distribution and municipal engineering: Salary open. Forward resume to Town of Vestal, New York.

ENGINEER

Structural or mechanical graduate engineer with U.S. experience in design of gates for hydroelectric power plants, spillways and outlet works. Should be capable of making preliminary estimates and determining gate type selections. At least five years of experience desired. A younger man to work under supervision. Send complete detailed resume of experience and qualifications to Personnel Department.

HARZA ENGINEERING COMPANY
400 W. Madison St., Chicago 6, Illinois

• POSITIONS VACANT

Railroad Track Construction Engineer—Must be capable of bidding competitively and executing work efficiently for Contractor engaged in Private Railroad Track Construction, fully equipped with modern track laying equipment. State background, experience and salary required. Excellent opportunity for right man. Reply to: P.O. Box 274, Cincinnati 14, Ohio.

Estimator wanted for heavy construction. Must be familiar with take-off, pricing, purchasing and subcontracts for highways, dams, airports and similar work. Location in New York City but involves travel throughout eastern part of the United States. Reply, covering experience, personal data and salary requirement, to P-2711, Engineering News-Record.

Graduate engineer with design experience in hydraulics, hydrology, flood control, hydroelectric and/or allied fields. Permanent employment with large midwestern consulting firm. Send resume and salary requirements to P-2710, Engineering News-Record.

Wanted: Construction Superintendent: Immediate opening Carribean Area. Must be capable of assuming full field responsibility for construction of multi-story modern hospital. C. E. preferred, but past record & experience will be considered as of prime importance in making selection. Application for consideration must contain, full and complete experience, history, salary requirements, age, references, etc. Inexperienced Engineers, Craft Foreman, Timekeepers, etc. will not be given consideration. P-2719, Engineering News-Record.

Project Manager or Assistant, three to five years building contractor field experience desirable. Permanent position in one location at home office. Well established Rhode Island contractor. P-2685, Engineering News-Record.

Soil And Materials Engineer, graduate civil with MS degree and minimum 5 years experience all phases soil engineering and materials testing to head laboratory for 3 years port job in South America. Salary $10,000-$12,000, plus $200 per month living expenses and one transportation-paid state side vacation. State education, experience and references. Reply to P-2738, Engineering News-Record.

The Village of Mundelein, Illinois is accepting applications for the position of Village Engineer. Mundelein is an established expanding Village of 10,000 population. This is an excellent opportunity for a man with technical and administrative ability. For an application and particulars, write John J. Noel, Mayor, Village Hall, Mundelein, Ill.

(Continued on the following page)

RECENT GRADUATES

in civil or architectural engineering, without appreciable experience, to train for any of the following permanent positions:

FIELD SALES—customer contact in highway, drainage and construction markets.
SALES PROMOTION—create marketing programs. Writing aptitude/interest mandatory.
STRUCTURAL DESIGN—both basic design and modification of standard designs of factory-engineered steel buildings.
SALES SERVICE—working with customers and field sales force on applications.

All positions but field sales are in Middletown headquarters. All carry salary, bonus and full expenses where travel involved. Send complete resume including salary requirements to:

General Office Employment

ARMCO DRAINAGE & METAL PRODUCTS, INC.
Middletown, Ohio

BUYER

Opportunity for recent mechanical or chemical engineering graduate to learn purchasing function at large industrial plant. Send complete details of qualifications and salary requirement to Mr. Hudson Nix.

Celanese FIBERS COMPANY

A division of
Celanese Corporation of America
P.O. BOX #444
CUMBERLAND, MARYLAND

SANITARY ENGINEER

Capable of responsible charge of investigations, reports and design for growing consulting sanitary engineering firm. Minimum of ten years' experience. Salary fully commensurate with qualifications. Excellent opportunity for advancement. Boston location. Complete resume in confidence.

P-2547, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

POWERHOUSE SUPERINTENDENT

Superintendent of power plant located in Iran. Must be university graduate, with degrees in Electrical Engineering preferred, or have the equivalent in engineering experience. Should have at least two years experience as service operator in hydroelectric powerhouse. Working knowledge of plant equipment necessary. Complete responsibility for disassembly repairs and reassembly of major equipment. Salary commensurate with ability. Living allowance and other fringe benefits. Initial two year contract with possibility of renewal. Send complete detailed resume of experience and qualifications to Personnel Department.

HARZA ENGINEERING COMPANY
400 W. Madison St., Chicago 6, Illinois

• POSITIONS VACANT
(Continued from preceding page)

Civil-Sanitary Engineer with at least 5 years' experience in design of sewage treatment plants, intercepting sewers, tc., on projects in the range of $500,000. Send brief resume of qualifications to Gardner & Sterling, Consulting Engineers, P.O. Box 74, Salisbury, Maryland.

Key position, structural/civil engineer leading to partnership. Small high caliber engineering firm with unlimited growth potential specialising complete integrated design service industrial parks, commercial/industrial buildings operating Central and Northern New York (Rural community excellent recreation, gracious living, exceptional school conditions.) Offers fine opportunity to ambitious, hard-working, well qualified experienced man who can assume full responsibility to execute all phases design and drafting work. Furnish complete resume, salary requirements, availability. P-2724, Engineering News-Record.

Construction Superintendent C.E. Georgia, must be experienced public works. Send resume, age education, experience & references, salary desired. P-2741, Engineering News-Record.

Construction Superintendent C.E. Wisconsin, must be experienced public works. Send resume, age, education, experience & references, salary desired. P-2739, Engineering News-Record.

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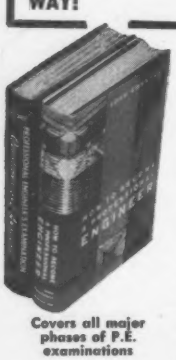

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A Karl Terzaghi Award

THE ENGINEERING PROFESSION has an unusual opportunity to honor itself by supporting a proposal to establish an award honoring Karl Terzaghi, the father of soil mechanics and a famed foundation consultant. From earlier times, names of notable engineers have been handed down to become a part of the civil engineer's language—the Whipple truss, MacAdam roads, the Francis turbine, the Imhoff tank, to mention a few. No name of modern currency could be more appropriately memorialized than that of Terzaghi, in connection with the science of soil mechanics, which he established and has continued to serve with such dedication and success.

The proposed award is the idea of the Soil Mechanics and Foundations Division of the American Society of Civil Engineers. It would be made for a paper published by the Society, judged to set forth truly exceptional contributions to engineering knowledge in the field of foundations. And this is particularly appropriate since papers by Professor Terzaghi himself have so often been in this category, and, moreover, have been presented verbally with such lucidity and brevity that many of them have had an immediate and profound effect.

Funds are being sought to establish the Karl Terzaghi Award. Money for stimulating the future development of the profession could not be put to better use.

Developing Leaders

LEADERS AND EMERGING LEADERS of every industry should be aware of the developing project of The Fund For Adult Education, an organization set up by the Ford Foundation in 1951. Purpose of this important project, generally stated, is to support programs to educate "mature, wise and responsible citizens who can participate intelligently in a free society."

The Fund's stress on education for public responsibility has particular meaning to construction's leaders and future leaders since so many of them shoulder or will shoulder weighty public responsibilities. The new project will concern itself with the nature of leadership in positions where decisions and actions have public consequences. Surely there are many such executive roles in construction, in both governmental and non-governmental organizations.

This is a program of adult education, but it is based on the need to improve education of people before they become adults. In this connection the Fund's directors emphasize the responsibility of the schools to teach students to think, to communicate, to decide, to be curious, to learn. And they also stress that adults so taught must continue to be educated by institutions, organizations and agencies beyond formal schools. For only by this continuous process of learning can men broaden their specialties, fulfill their duties better and develop their capacities—become effective leaders.

Significantly, the Fund's directors state that we should take far more seriously the critical role the communications media play in education through adult life: "These must be regarded as educative forces and used imaginatively and responsibly for enlightment and understanding." To the editors of ENGINEERING NEWS-RECORD, whose overriding objective is to make this journal a truly "educative force," such an admonition is welcome indeed.

The Fund directors also point out that a free society needs more leaders than a totalitarian one. Therefore more people to lead must be developed if our free society is to be preserved.

The Fund For Adult Education (200 Bloomingdale Road, White Plains, N. Y.), therefore, proposes its program. It intends to work among those who now shoulder public responsibilities—whether they are in private or public positions. It intends to teach through schooling and through practical experience. It will begin with assistance to about ten colleges and universities and to a selected few national organizations cooperating in the program. Its efforts rate the interest and support of construction's leaders, present and future.

Pakistan Takes the Offensive

AFTER A DECADE OF WATER WORRIES, during which wrangling with India over division of the Indus River water took precedence over positive planning, Pakistan has decided to abandon procrastination and go to work. This seems to be the logical conclusion to be drawn from the announcement that Pakistan's Water and Power Development Authority plans to spend $800 million on irrigation and hydroelectric projects during the next five years.

Such a program will be the best antidote for this underdeveloped country's woes. And it will give its engineers and government officials a needed lift. They need no longer feel that nothing can be done until the Indus question is settled.

Meanwhile, of course, there is more hope than ever before that the Indus dispute may be resolved in a fair and equitable manner. Within the past month both India and Pakistan have accepted the basic points of a plan proposed by the World Bank, and discussions are now under way on the details of a treaty. Under the plan India would pay Pakistan such sums as are necessary to develop new sources of water to replace that which India diverts from the Indus and its Punjab tributaries. Pakistan's prospects for getting this money make it all the more probable that the new plan for water development will succeed.